Four gas-fired assay furnaces were part of the equipment used at the University of Illinios

Salesmen Take Tabloid Course in Steel Treating at University

By W. W. Maloney

THAT modern American universities are more alert than heretofore in keeping pace with economic and industrial developments is illustrated by the promptness with which courses are inaugurated to cover new situations as they arise. This is particularly true of technical schools, which in recent years have installed considerable equipment in order that the students might have the benefit of training under at least average shop conditions.

In most engineering schools heat treating had been considered a part of the training, in forge shop practice. Now, however, a number of universities have adopted special courses in heat treating and have installed the necessary equipment to offer students practical demonstrations of heat treating operations.

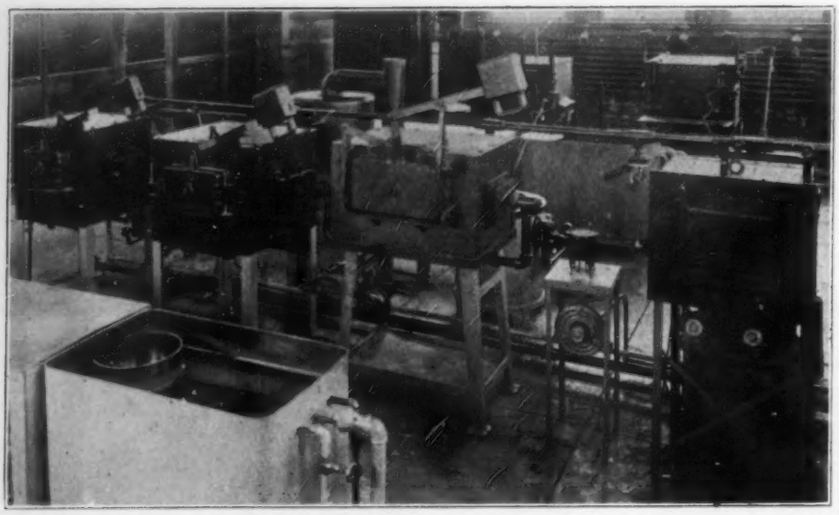
The University of Illinois, Urbana, Ill., has gone a step farther and has inaugurated a short course in heat treating. Classes and shop work began June 21 and ended July 10, the training being a part of a short course in gas engineering.

The gas engineering course was sponsored by the Illinois Gas association's committee on cooperation with educational institutions. In the final examination each student was required to submit a complete report covering his recommendations as to the equipment which he considered should be installed to displace other fuels, used by certain prospective customers in two of the three fields of gas service. These fields cover the heating of industrial plants, houses, hotels and restaurants. The report covered:

1. A complete analysis of the present method of heating.
2. The equipment recommended to displace the old appliances.
3. Recommended gas main extensions.
4. Size of service.
5. Capacity of gas meter required.
6. Layout of interior piping.
7. Temperature control to be used.
8. A sales letter to the customer justifying the proposed installation.

While the course was designed primarily from the standpoint of gas salesmanship and engineering, a thorough grounding was given in the application of gas to heat treating, tempering, hardening and annealing.

Because of the educational differences existing between the 72 entrants taking the course, it was



Three gas-fired and one electric oven furnace for general purposes

necessary to precede the metallurgical work with lectures and practice in allied and supplemental subjects. This included the following subjects:

1. Relation of energy and matter; principles underlying gas engineering calculations.
2. Fuels and combustion; demonstration and practice in calculating efficiencies.
3. Design and layout of service gas piping.
4. Meters and metering; high and low pressures and demand meters.
5 Combustions systems; demonstration and practice.
6. Temperature control; demonstration and practice.
7. Furnace construction and design; general principles.
8. Refractories and insulation.
9. Fuel and furnace calculations and problems.
10. Application of gas to low temperatures and to the nonferrous industry; demonstration and practice.

The entire course comprised two weeks of instructional work and problems, including lectures, demonstrations and practice. Prof. M. M. Austin, chief metallurgist, Pfanstiel Co., North Chicago, Ill., formerly associate professor in chemistry, University of Illinois, had charge of the metallurgical branch of the course.

The first two hours in the classroom included an explanation by Prof. Austin, of the characteristics of steel and the various processes it is put through to produce the different degrees of hardness, toughness, elasticity and other physical properties. He illustrated such features as the eutectic point and recalescent point with the use of colloidal suspensions, certain salt solutions and precipitations.

Prof. Austin conducted the classes through the university laboratories, demonstrating and giving the opportunity for actual practice in methods of heat treating steel. During the past two years some $25,000 has been expended in adding to the gas-fired furnace equipment at the university, for practically every type of heat treating. The list of furnaces includes those used for assays, brass melting, heat treating, load tests and core ovens.

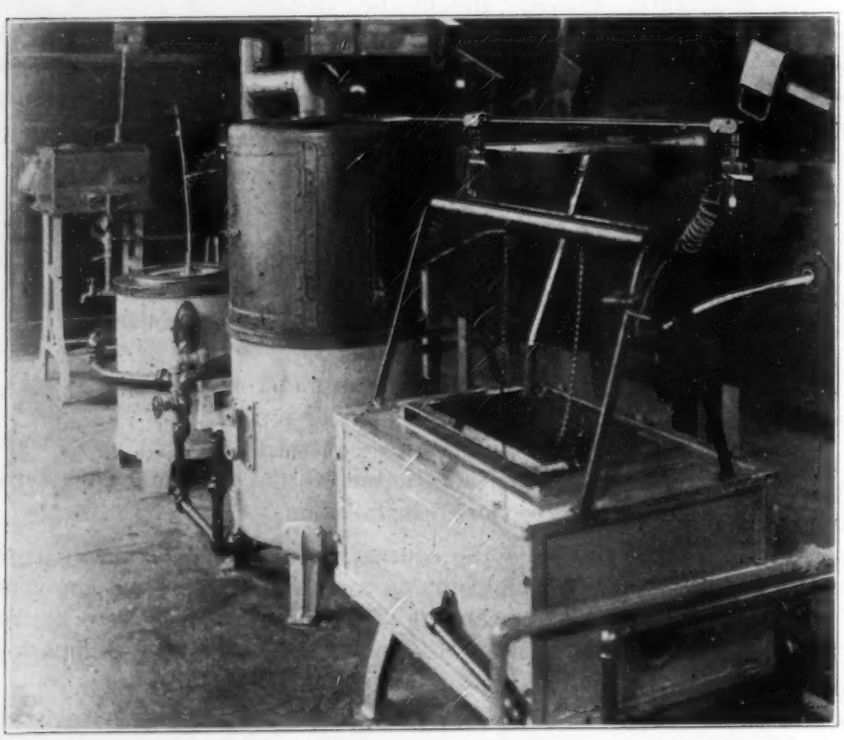
The chemical laboratory equipment includes 14 high temperature oven furnaces with carborundum hearths and clay muffles, a crucible furnace and a low pressure gas-fired steam boiler. The furnace equipment of the ceramics laboratory, for use in firing pottery, consists of ten special furnaces 16 x 24 x 16 inches for temperatures up to 3000 degrees Fahr., four "volcano" fusion furnaces, a load test furnace for testing brick under heat, a rotary kiln 12 inches x 10 feet for temperatures to 3000 degrees Fahr., a gas-fired dryer and burner equipment for oil, coal and gas-fired furnaces.

In the forge of the university are two hardening furnaces, while foundry equipment includes two core ovens 3 x 3 x 5 feet, a truck core oven 8 x 10 x 6 feet and a crucible furnace.

Following the instruction in metallurgy, the students took up work in competitive fuels and utilization costs, preparing and making industrial surveys, and the principles of gas salesmanship. The latter included installations and operations and methods of selling gas-fired equipment to industrial companies, to hotels and restaurants and to homes. The final week of the course was spent on the properties of the companies employing the students, preparatory to the main problems.

The success of the initial course practically assures its continuance in the future. It is believed manufacturers of heat treating appliances will make greater use of the opportunity it offers in training their salesmen, giving practical and scientific education.

Tuition expenses were prorated among the companies sending entrants, and the cost of the training was nominal. The interest of equipment makers is obtained by their



Various gas-fired steel treating equipment used in the machine shop

being invited to send to the university for use during the course various types of burners and service appliances, as well as slides showing installations and methods of use.

Canadian Output Drops

Canadian production of pig iron totaled only 67,232 tons in July, as compared with 70,854 tons in June, representing a decline of 5 per cent, according to official Canadian figures. The July production of ferroalloys amounted to 2931 tons, a decrease of 26 per cent from the production in June. There was also a decrease of 20 per cent in the Canadian output of steel ingots, which totaled 64,847 tons in July and 81,277 tons in June.

The cumulative production for the first seven months of 1926, however, totaling 438,096 tons of pig iron and ferroalloys was 40 per cent higher than that of the similar period in 1925 which was 311,838 tons. Steel ingots and castings were also higher during the first seven months of 1926 than in 1925, showing 496,031 tons against 446,168 tons, an increase of 11 per cent.

Bangor Hydro Electric Co., Bangor, Me., has acquired control of the Millinocket and East Millinocket Electric Co., which operates a Diesel engine generating plant and central station at Millinocket, Me.

Conveyor Handles Bulk Materials

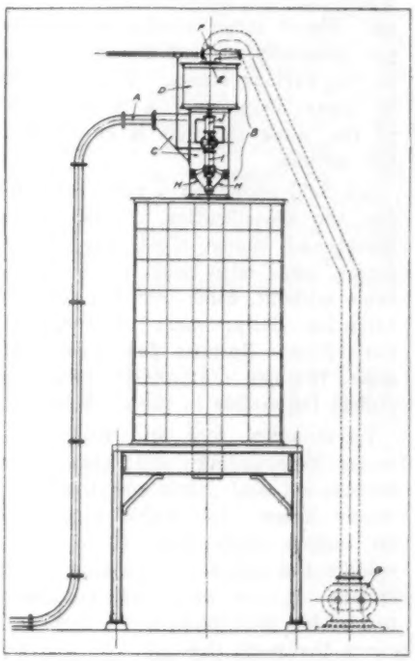
A PNEUMATIC conveyor, designed to handle bulk materials of a granular nature which possess characteristics making it possible to readily feed them by gravity into an opening in a pipe line is being manufactured by the Conveyors Corp. of America, 326 West Madison street, Chicago. Materials which can be handled include ashes from pulverized fuel, stoker ashes, coal, chemicals of a granular type.

The equipment is shown in cross section in the accompanying illustration. A conduit or pipe line *A* of desired length, wherein is located the intake opening or openings into which the material is fed. This conduit terminates at, and is joined to the operating head *B*. This operating head is divided into two zones, termed the accumulator zone and suction zone respectively. The lower section, designated as *C*, constitutes the accumulator zone, while the upper section, designated as *D*, is the suction zone. Outlet from the operating head, at point *E*, leads into an exhauster of the high efficiency steam jet type, as at *F*, or a motor-driven rotary exhauster, as shown at *G*. The accumulator zone is equipped with two gates *H*. The operating head is provided with three openings, one through conduit line *A* providing for the entry of material to be conveyed, a second at gates *H* providing for the discharge of the accumulated material, and a third at *E* furnishing the exit for the air used in the conveyor line.

Operation Is Described

Operation of the equipment is as follows: The exhauster of high efficiency steam jet or rotary type is started, exhausting the air from the operating head through suction zone *D*, which contains no material. Gates *H* being closed, the only point through which air can be drawn to replace that drawn from the operating head is through the conduit *A*, wherein is established the current of high velocity and volume necessary to carry the material. Material accumulates in the accumulator zone *C* to a predetermined weight, for which adjustment can be made. When it has reached this point release of the gates is effected through hydraulic device *I*, and the accumulated material is discharged into a tank, pile or open car, as may be desired, at the bottom of the operating head.

With the material completely discharged, the gates are automatically restored to their original closed position, hermetically sealing the operating head by means of a cylinder, *J*, and a repetition of the former process of accumulation takes place. The period of time required for accumulation depends upon the capacity of the operating head and the weight which it is desired to accumulate before discharging. Adjustment can be made for any weight desired, the standard size holding up to 1000 pounds, while special sizes can be made for greater amounts. The cycle of opening the discharge gates, discharging the material and restoring the accumulator head to its original hermetically sealed state consumes not more than 1¼ seconds.



CROSS SECTIONAL VIEW OF CONVEYOR SHOWING OPERATING HEAD IN DETAIL

Equipment Is Adaptable

The conveyor can be adapted to the handling of different materials through the same operating head by running branch lines and using multiple spouting below the discharge point, whereby each material can be spouted to its proper destination after leaving the accumulator head. In a boiler plant, for instance, one spout underneath the operating head can lead to the ash bunker or storage hopper, and a second spout to the coal bunker. Gating of these spouts can be so arranged that when it is desired to operate on ashes the coal gate is closed, while the reverse is the case when it is desired to convey coal.

There are claimed to be no dusty discharges from this equipment, the suction zone of the operating head being so designed as to trap dust inside and discharge it with the main body of the material. As the operation of discharge is dependent upon an exact predetermined weight, the conveyor also acts as an automatic weighing or checking device on material passing through it.

The conveyor can be furnished in standard sizes having discharges ranging from 5 to 50 tons per hour. Equipments in excess of 50 tons capacity can be furnished according to special requirements. A test made on stoker ashes through a 5-inch suction line is said to have shown an hourly capacity of 23.6 tons, with a steam consumption of 118 pounds per ton, a high efficiency steam jet exhauster being used for establishing the air flow.

Inside view of oil field machine shop showing drilling and fishing tools. On the lathe to the right is a large drill bit ready for turning

Field Shops Aid Oil Drilling

Speedy Well Driving Operations Are Facilitated Through the Prompt Co-operation of the Field Machine Shops—Tool Repairing Is an Essential Part of Shop Practice

By Dudley W. Moore

MODERN machine shops and machine tools are absolutely essential to successful operations in the oil fields. While used largely for repair work in maintenance of drilling and pumping equipment, they also furnish the outlet for much experimental work carried on by oil companies in developing new methods of producing oil and prolonging the life of the fields. When an oil field is discovered, wells must be drilled at once to prevent the draining of oil sands. Therefore drilling equipment must always be on hand in satisfactory condition to handle a quick and strenuous job. Pipe lines must be built, storage tanks erected and gasoline plants constructed, all in record time. The oil field machine shop, therefore, has its own problems and peculiarities.

Variety Of Work Handled

Two classes of shops are found in the oil fields. One is the emergency shop, located in the heart of the active area, where light, every-day repair jobs can be handled easily and quickly, especially the latter. The other is the more permanent shop, usually located in towns adjacent to the field where railroad connections may be had and where large stocks of material are generally carried for distribution to the various leases. The outfitting of these shops and a general idea of the work they do is reviewed in this article.

Oil field shops, as a rule, come under the classification of job shops. Metals of many sizes, shapes and forms, some with heat treatment and some without, come into the shop for attention daily; most of them are rush jobs. Because few pieces are alike, the use of jigs or fixtures is almost impossible in the oil field shop.

In standard tool and rotary tool work, rethreading and chasing of threads on tool joints are the major repair items. For cable tool work, an engine lathe with large hollow spindle and chuck at both ends of the spindle is the necessary equipment to receive the long, large stem and carry the work through over the tool post. Such a lathe usually is the 27-inch oil country lathe, a spindle with a 10-inch hole through it, a selective head, taper attachment and change gears for cutting threads. It should be possible to cut threads from below leads of 1-inch up to 32 per inch. Thread gages also are necessary for the various tool joints. The lathe described is essentially of the heavy-duty type and is usually powered by electric motors.

Fishing Tools Need Repair

Rotary tool joints, with thread gages to match those in use, also can be handled by this same lathe. Rotary tool joints vary in size, most of them being 4-inch, although in some fields the 6-inch and 3-inch are used. A collection of thread gages usually is necessary to handle the different types of joints employed.

Fishing tools comprise much of the oil field shop work. A fishing job on an oil well is a tedious process and usually results in smashup of several fishing tools before the drilling tools are recovered from the bottom of the well. Sockets, wall hooks, taps, nipples and spears are the component parts of fishing tools which require most repair work. Many field shops

design and make their own fishing tools by fashioning the blunt ends of the tool steel as they may desire. The many different styles used, with lack of standardization making replacement value difficult, naturally calls for constant machine work.

Many Operations Required

For this class of work, the heavy-duty lathe previously mentioned, a shaper, a milling machine and a radial drill are needed to turn, shape, bore, mill and drill these tools to the proper shape. Many fishing tools have tool steel slips, jaws, pins, wedges and springs and a heat treating furnace with temperature indicator is the prime requisite for refashioning them. Under-reaming tools require the use of a miller, shaper and lathe to repair their component parts, consisting of lugs, slots, pins, etc. Liners which are made of casing or drill pipe, require the drilling of several holes in which a multiple drill head used on a radial drill will work to advantage. Where the holes are spaced far apart and fast work is necessary, a high-speed sensitive drill of 5000 revolution per minute will suffice.

Engine and pump clyinders require reboring occasionally and the heavy-duty lathe, fitted with boring bars, has been found best adapted to this class of work. Steam engine and duplex pump cylinders are seldom rebored. Gas engine cylinders usually require reboring at intervals of three to five years. In reboring the cylinders an oversize piston is required and if not available in oversizes, castings can be finished in the shop to fit the cylinder. Most manufacturers supplying the oil field machine shops, furnish pistons with rod or pin hole bored and ends finished, but with a rough diameter to permit turning to the proper oversize diameter at the shop. As a general thing, the smaller parts for gas engines and pumps are purchased usually at the supply stores more cheaply than they can be made in the oil field shop.

Engine crankshafts usually wear out of round and must be turned up by the engine lathe. By using a simple fixture, it is said, that the shafts can be ground to size, giving a smoother finish which results in a better running engine. Piston rods must occasionally be turned off, eccentrics turned up and engine guides rebored and faced. The reseating of gas engine valves and turning down of light commutator can be accomplished with the lathe. Milling machine and shaper work will take care of shaft key seats, steam engine slide valves and also the grooves on fishing tools and under-reamers.

Rethreading pipe, one of the common items of machine shop practice in the oil fields, is easily accomplished with the standard pipe cutting and threading machine, one machine usually taking the largest size pipe from 20 down to the 12½-inch and another taking the 12½down to the 2-inch size. Many oil companies have effected savings in reconditioning drill pipe by cutting off the old threads, chasing new threads and working the short odd lengths of pipe into nipples. Where it is necessary to cut longer pieces, these can be used as exhaust pipes, etc. Casing and drill pipe, thus treated, will be useful for gas or water lines.

Steam Hammers Useful

Because of a large amount of hammer forge work and heat treatment of pieces, steam hammers of from 1000 pounds for light work and 3000 pounds for heavy duty usually are employed. In cable tool territory stems and jars must be welded, hooks straightened, fishing tool forgings made, etc. Rotary equipment repairing with this machine requires dressing fish tail bits, straightening hooks and links, annealing parts and making forgings for fishing tools. The largest shops usually have both a light and heavy-duty hammer, while the average oil field repair shop has but one.

Most steam hammers in oil field repair shops are driven by compressed air, with gas engine power. In a few cases they are driven by steam where gas is not readily obtainable. Air compressors are an important part of the equipment of modern shops and the same air employed in the air hammers is used also to drive riveting machines and air drills, and for cleaning parts by sand blast. In pipe line stations where diesel engines are used, excess air from the compressors is employed to operate all machine shop equipment.

Need Welding Equipment

Welding and cutting equipment for repairing boilers flues, welding tanks, cutting casing etc. is employed extensively in oil field machine shop practice. Shop equipment usually consists of a large stationary acetylene generator, heating torches, furnace and tips; also a portable set consisting of oxygen and acetylene cylinders with welding, heating and cutting torches, all mounted on a small truck. The portable apparatus now is a part of the equipment of all emergency shops near the scene of actual operations in the fields. The more permanent shops have installed electric arc welding equipment.

Material usually carried by the field shop for fabricating certain equipment parts, consists of forging steel in rounds up to 6 inches, also in squares and flats, rolled flat sheets up to about 5 feet wide and 16 feet long, brass and bronze stock up to 6 inches, shafting up to 4 inches, tool steel rounds for springs spring wire in brass and steel up to No. 000, machine bolts from ¼ to 1-inch diameter, stud bolts, cap screws, nuts washers etc. Fishing tool parts, pins and the like are common fabricated items. The scope of the work is constantly being enlarged and in the course of time will include several of the items now manufactured in multiple production.

Value of Mineral Output Near Peak

MINERALS produced in the United States in 1925 had a total value of $5,696,000,000, or 7 per cent more than the $5,305,800,000 value of products in 1924, according to a summary issued by the bureau of mines, Washington. There were no major disturbances in the industries except the prolonged suspension of anthracite mining, and save for that check, says the bureau "the total value of mineral products of the year would probably closely approach the 1923 value which marks the peak of production, if the 1920 inflation of values is dicounted."

The total value of the metallic minerals produced in 1925 was $1,380,100,000, an increase of 12 per cent over 1924. Nonmetallic mineral products, other than fuels, in 1925 had a value of $1,293,900,000, or 11 per cent over 1924. The output of mineral fuels, coal petroleum, natural gas and natural-gas gasoline in 1925 was valued at $3,016,000,000, or 4 per cent more than in 1924.

On the subject of coal, the report states:

"The general drift in the eastern and central regions toward greater production in nonunion territory, noted in 1923 and again in 1924, was even

more pronounced in 1925. In districts that had formerly been organized as 'union' mines were operated as 'nonunion.' This change was first marked in northern West Virginia, and later in western Pennsylvania. As the change from union to nonunion status was accomplished without serious interruption to production, the general effect was an increase in nonunion tonnage and a corresponding decrease in union production."

In 1925 the bituminous coal mining industry showed an increase in production over 1924 of approximately 40,000,000 short tons, or the equivalent of the average output of soft coal mines for about four weeks. Estimated production during the year was 522,967,000 short tons, compared with 483,687,000 short tons in 1924, or an increase of 8 per cent. The average spot price in 1925 was $2.06 compared with $2.08 in 1924 and $2.77 per ton in 1923.

Production of anthracite was 55,194,000 long tons, valued, f.o.b. mines, at $327,665,000, as compared with 78,506,000 long tons, valued at $477,231,000, in 1924.

Coke production in 1925 was about 50,700,000 short tons, as compared with 44,270,000 short tons in 1924. Both beehive and by-product coke shared in the increase, the production of beehive coke being 4 per cent more than in 1924, and that of by-product coke 18 per cent more than in 1924.

The total output of petroleum in 1925 was 764,000,000 barrels, an increase of 7 per cent over 1924 and 4 per cent over the previous figure of 1923.

Under the heading of manganese the report comments on the "phenomenal increase" in the use of manganiferous iron ore in 1925, "by far the most important development of the year." The growing use of manganiferous iron ore to purify pig iron and add to it a small amount of manganese accounts largely for this increase.

The output of manganiferous iron ore, 5 to 35 per cent, was 2,739,254 tons in 1925 compared with 898,468 tons in 1924, and the value in 1925 was $3,752,486 against $1,448,054 in 1924. Domestic production of manganese ore, 35 per cent or over, increased from 58,348 tons in 1924 to 1,318,771 tons in 1925, and the value of the output rose from $98,324 in 1924 to $1,857,769. The increase was due largely to the production of 47,507 tons of rhodochrosite in Montana.

Electric Furnace Makes Quality Steel

By J. R. Jackson

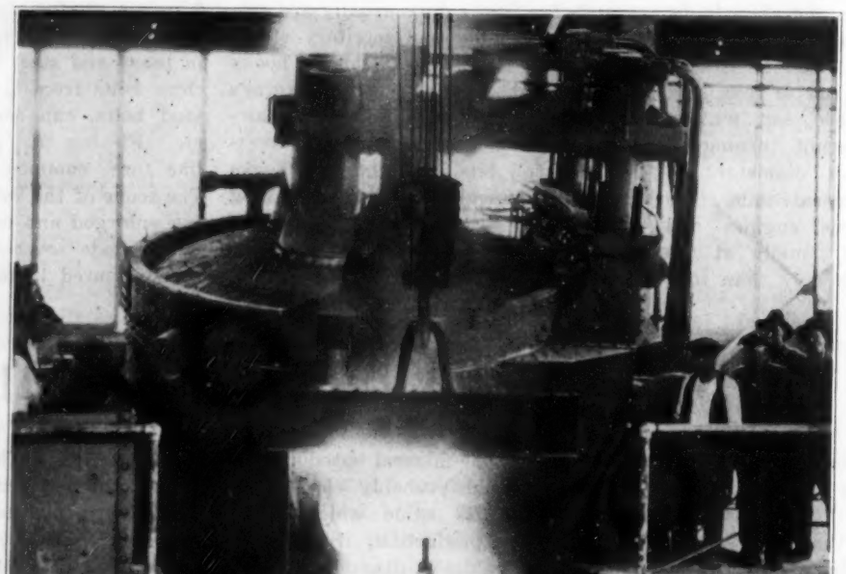
A HISTORY of electric steelmaking is in effect a history of the development of the electric furnace from the time of the earliest experiments up to the present. A brief account of the development of the various types of furnaces, a short description of the types now in use, and the extent of electric steel production, will prove this statement.

Sir Humphrey Davy, the great English chemist, in one of his experiments in 1810 made use of the heating effects of electric current for the first time, using for his source of power a voltaic pile. Pepys in 1815 first welded an iron wire by means of the electric current. He cut a slot in an iron rod and filled it with diamond dust. The rod then was wound with wire and heated to a red heat for 6 minutes. Examination of the slot at the end of this time showed that the diamond dust had completely disappeared. In this way iron for the first time was heated electrically. From that time on, however, there were practically no developments in electric heating until the introduction of electrical machinery.

Previous to the introduction of the dynamo, the only sources of electric power were batteries, usually extremely expensive and of small power. When electrical machinery was developed, experiments on the heating effect of the electric current again were resumed, and as a result, we have the first application of electricity in the melting of iron in 1878 by Sir W. Siemens. The Siemens furnace was operated from a single-phase alternating-current supply, and was but a large air-tight crucible lined with firebrick. A carbon electrode was let down from the top, this striking an arc with the metal to be melted, the latter being connected electrically to the other side of the supply line. Since the temperature of the electric arc is so extremely high the metal after being placed in the furnace soon is melted and can be drawn off. Because of various minor constructional details, the original Siemens furnace was never practical commercially and has had small use in metallurgical operations.

First Successful Furnace Built

Heroult in the years 1888-1894 first successfully applied electric current in the manufacture of aluminum and calcium carbide. The first practical steelmaking furnace was that of Stassano which made its appearance in 1898. In 1900 the Kjellin furnace was patented, and in the same year Heroult modified his furnace so that it could be used in steelmaking. This furnace was introduced into the United States shortly afterward, when the United States Steel Corp. se-



TAPPING A 7-TON HEROULT-TYPE ELECTRIC STEELMAKING FURNACE

cured American rights to the patent. The Girod furnace was brought out in 1906; Heroult's original idea of the bottom electrode was similar to the Siemens idea, and the Girod furnace was operated on this same general principle. The Rochling-Rodenhauser induction furnace, an improvement on the Kjellin type, was brought out about the same time as the Girod, and at the present time is the only one of the induction type which has survived.

The principle of the induction furnace is somewhat similar to that of the transformer. The large-size induction furnaces operate on 25 and 60 cycles per second, while special high frequency furnaces, ranging in size up to a few hundred pounds, operate on frequencies of from 500 to 50,000 cycles per second. The metal to be melted is placed in a crucible surrounded with a coil of wire; the coil is connected across the terminals of the high frequency power supply line and acts as the primary of a transformer. Eddy currents are set up in the charge, and since there is no electrical outlet for this energy, it is spent in heating the metal.

With the recent development of high-power vacuum tubes operating with frequencies in the order of from 100,000 to 1,000,000 cycles per second, small induction furnaces have been made which operate efficiently and which are much more convenient than the ordinary type of low-frequency furnaces. The vacuum tube induction furnace is likely to be the prevailing type of induction furnace in the future, since improvements in high power tubes are being made all the time.

Heroult Type Widely Used

There are two main types of electric furnaces in use in the United States. The first and most widely used is the direct arc with nonconducting hearth of which the Heroult is the principal example. The older types of direct-arc furnaces had a carbon-lined bottom, connected to one terminal of a single-phase power circuit. This was a decided disadvantage since the carbon when heated combined with the iron. Heroult eliminated this fault by splitting the single direct arc into two arcs in series, the charge completing the circuit between the two. In the present type of Heroult furnace, which is essentially the same as the older type, the 1-ton size requires an electric power of 600 kilowatt-amperes and the 10-ton type requires a power of 2800 kilowatt-amperes. Sizes of these furnaces range from 100 pounds to 25 tons. Some of the largest are those of the United States Steel Corp. at South Chicago where there is an installation of six furnaces, each of which has a capacity of 15 tons.

The second type of furnace in use in the United States is the Girod conducting hearth type. This furnace is essentially the same as the Heroult with the exception that one side of the power supply line is direct connected to the hearth, the current making the circuit through the hearth, the charge, the arc, and the carbon electrode. A 10-ton furnace for melting and refining cold scrap charges was put into operation at the Bethlehem steelworks in 1916. This furnace has a shell 5 feet in depth and 15 feet in diameter. Fourteen soft steel electrodes, 3½ inches in diameter are electrically connected to the bottom plate.

Utilizes Radiated Heat

The Stassano furnace, which is used considerably in Europe, is of the indirect-arc type, utilizing the heat radiated by the arc. The inside of the furnace is like a segment of a sphere, the top being designed to radiate the heat downward upon the charge. The furnace is lined with magnesite brick to resist the great heat developed, and in the 1-ton type, 80 heats can be made before the furnace must be relined.

Various improvements in the design of electric furnaces for steel production have resulted since Siemens' first demonstration, and as a result of these improvements, electric steel production has increased enormously. According to the United States census, 52,000 tons of steel were produced in the United States in 1912 by the electric process. In 1920, production was 502,000 tons, or an increase of over 900 per cent. There were 22,000 tons of steel produced electrically in Great Britain in 1915 and 87,000 tons in 1920. In 1912 there were 125 furnaces in use throughout the world, while in 1920 this number had increased to 1200, one-third of which were in the United States.

The quality of steel produced electrically cannot be duplicated in any of the common methods of commercial production. The finest quality and any degree of hardness and purity can be obtained, due to the high heat with controllable atmosphere, namely oxidizing or reducing, as desired. The main uses for this steel are in the making of fine cutlery, cutting tools and machine parts where the highest grade of steel is essential.

An installation of six 1500-kilowatt-ampere Heroult furnaces was made several years ago in Heroult, Shasta county, Calif., where about 500 tons of pig iron was produced weekly. There is considerable iron ore in this region and plenty of waterpower, but no coal. Ordinary pig iron could be produced electrically and sold in San Francisco as cheaply as that produced in the blast furnaces either on the Pacific coast or in the East, and shipped thence to the Pacific coast. A substantial increase in power rates forced the company to cease operations.

This brings us to the discussion of the future of electric steel, the determining factor of which is the source of power. There are many places in the world like Heroult, Calif., where there is plenty of iron ore and waterpower, but a small available coal supply. Norway and Sweden are typical examples. Such places undoubtedly will be of vast importance in the future of electric steel production. The future will see a greater efficiency in power generation and a greater conservation of fuel in our present iron and steel centers. The giant power development which in effect pools all the waterpower resources of the eastern part of the United States for the purpose of generating electric power will be of the greatest importance in the electric steel industry, as a cheaper and more efficient power supply will then be available.

Modifies Indian Tariff

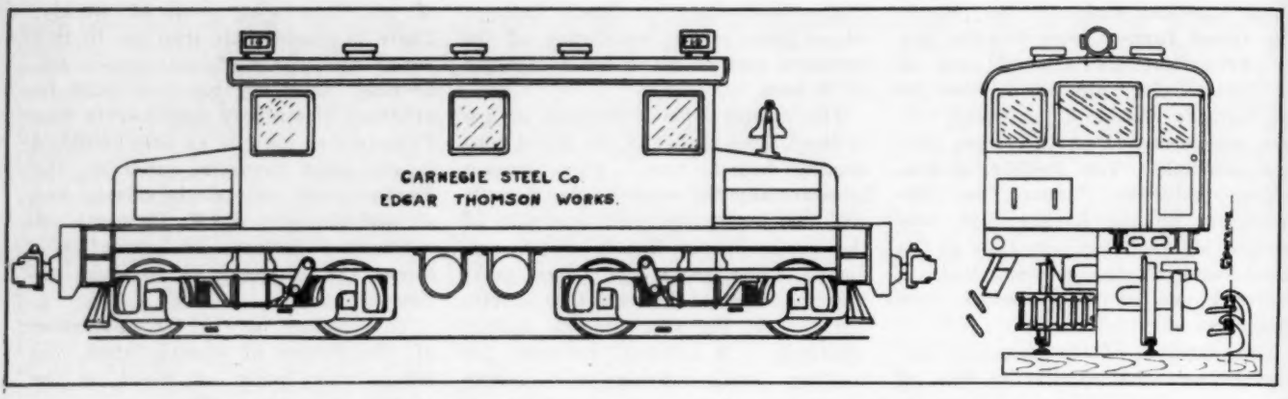
The Indian tariff board has had under consideration several applications for changes in the Indian tariff rates, according to a report to the department of commerce from Trade Commissioner Spofford, at Calcutta.

The first was for abolition of the 15 per cent duty now levied on imported spelters; the second for an increase in the duty on galvanized hardware from 15 per cent to at least 20 per cent ad valorem; the third was for an increase to 25 per cent ad valorem, the rate applied to fabricated steel, on all kinds of imported poles used for transmission lines, which are at present classed as machinery and liable to duty of 2½ per cent.

The tariff board recommended the removal of the duty on spelter.

Dealing with the second proposal, the tariff board arrives at the conclusion that the galvanizing industry is not in any way handicapped by the abolition of the present tariff, but, on the contrary, enjoys a substantive protection of about 5 per cent.

The first blast furnace in the Juniata valley in Pennsylvania was built in 1785. The stack made 10 tons of iron weekly.



Side and End Elevations of 80-Ton Swivel-Truck Electric Locomotive, Showing Location of Third Rail Shoes

Steel Plant Buys Electric Locomotive

TO move hot metal from the "bull pen" to the mixer building at its Edgar Thomson works, Braddock, Pa., a distance of approximately one-half mile, the Carnegie Steel Co. has ordered from the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., an 80-ton, swivel-truck, third-rail type electric locomotive. This locomotive is said to be the largest electric unit to be purchased by a steel manfacturer for yard service. Service conditions at Braddock are ideal for electrification, operations being sufficient to keep the locomotive busy and at the same time somewhat isolated from other yard work. Power for the third-rail system is available from the mill circuit.

The track over which the locomotive will operate is known as the "hot metal elevated," as it passes over several other yard tracks and the tracks of the Baltimore & Ohio railroad. More than half of the run has a grade of 2.75 per cent, a portion of which lies in a curve of 300 feet radius. This combination of a heavy grade and a sharp curve makes the operating conditions unusually severe. The maximum train contemplated consists of five loaded ladles weighing 72 tons each and a 15-ton caboose. The locomotive must be capable of starting this train at the most inadvantageous position on the run which, of course is on the heavy grade and curve. With a conservative factor of adhesion of 25 per cent, an adhesive weight of 80 tons on the drivers is required.

24-hour Service Required

An average train will consist of four ladles, each containing 25 tons of meal, and will complete the cycle of one run in 20 minutes. This service is of 24-hour duration, seven days a week. The locomotive, therefore, must be of extremely rugged construction to withstand such demands of service, and also must have an ample margin electrically. All the spare capacity contemplated consists of one motor truck complete in all details, including third rail shoes and with motors installed.

Much Switching Done

The cycle of operation calls for several switching movements and is essentially as follows: The locomotive couples to loaded ladles in the bull pen and moves out upon the hot metal elevated track in reverse; then couples on caboose and proceeds up the elevated with the caboose and ladles ahead. The caboose is switched out of the way at the upper end of the run and the ladles placed in the mixer building. The locomotive then returns with empty ladles and caboose, placing the empty ladles in the cleaning shed. It is planned to transport 6000 tons of hot metal per day in this way.

Current will be collected from a double third rail at 230 volts. For the present, at least, the power will be taken from the mill power system, and as it is undesirable to ground the present circuit, positive and negative third rails will be used. These will be located both on the same side and outside of the running rails. They are of the under running type and will be placed one above the other. This type of third rail is inherently easier to protect and hence more suitable for yard work. Considerable care has been taken by the operating engineers in laying out the third rail location to eliminate the necessity of the third rail shoes approaching the rail from the side, as, for instance, might occur at a crossover. This eliminates the need for side incline rails at such points.

Due to its required height and desired clearance from steam locomotive step and cylinder, the third rail has been located at an exceptionally great distance form the track. If it were permissible to ground one side of the locomotive power supply, requiring only one third rail and using the running rails as the return circuit, the third rail could be brought considerably closer to the running rail. This would be desirable as it would permit operation at closer quarters.

The relative locations of the third rail shoes are shown on the locomotive in the accompanying illustration. As there are some special considerations involved in their arrangement they may well be noted here. It will be seen that there are two shoes, on each truck one positive and one negative, to facilitate bridging necessary gaps in the third rail. They are located on different horizontal planes; the end view shows the shoes on the right in the operating position while those on the left are raised. It is necessary that the raising and lowering of the shoes be controlled from the operating compartment to meet certain clearance restrictions.

Join Metal Trades Body

Eight additional members have been admitted to the National Metal Trades association, the Aug. 25 issue of the association's BULLETIN naming the following:

City Machine & Tool Works, Dayton, O.; American Oven & Machinery Co., Allbright-Nell Co., Carlson Forging Co., Charles E. Larson & Sons, and Chicago Boiler Co., all of Chicago; C. B. Cottrell & Sons Co., Westerly, R. I., and the Domestic Engine & Pump Co., Shippenburg, Pa.

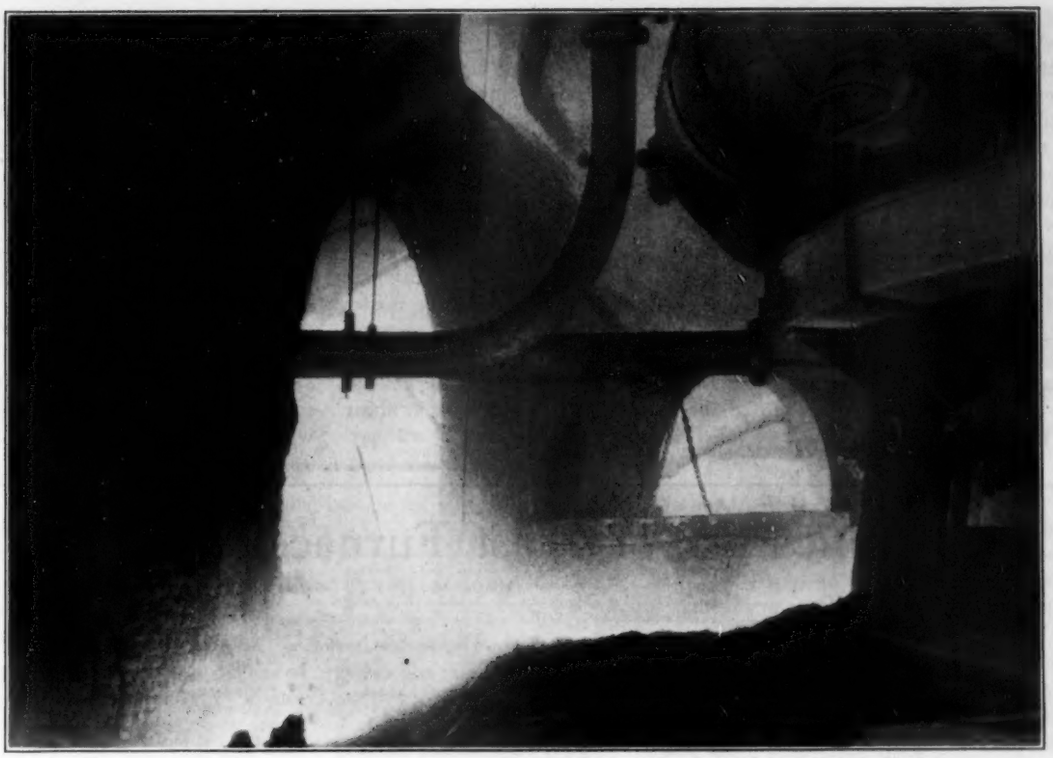


Fig. 1—Typical flush of cinder from a blast furnace showing the volume of fume which rises when the slag is on the basic side

Gases Affect Fluidity of Slag

Volume of Gas Carried in Solution by Blast Furnace Slag Is Indicated by the Odor, Fume and Flame—Manganese, Iron and Sulphur Serve as Temperature Indicators — Classification Is Presented

By Wallace G. Imhoff

ALL slag seems to contain a large quantity of gas, not in the form of bubbles, for these are often entirely absent, but presumably dissolved or occluded, according to J. E. Johnson Jr. He points out that the relation of cause and effect between the maintenance of the critical temperature of the slag and the proper work of the furnace, on one hand, and between the proper working of the furnace and the nature of the gas, on the other, is so close that one is led to suspect that the fume which gives the top gas its thick white appearance is a product of a slag at its proper temperature, and that the gas evolved from the slag is a portion of the hearth gas dissolved in the slag. He contends this gas is combustible as shown by its often burning when a small jet comes through a crack in the pot, though the gas evolved at the time of dumping does not burn. Mr. Rigg suggests that the presence of this gas may have a decided effect on the fluidity of the slag. Mr. Johnson points out that the most fluid blast furnace slag evolves the most gas.

FIG. 2—EXCESS FREE SULPHUR GAS RISING FROM THE MOLTEN SLAG

Investigations disclose why some slags hold a large amount of gas and others a small amount; and, why in some cases dense clouds of white fume rise from the slag, and at other times, only a thin blue choking vapor. The classification of blast furnace slags is presented in the accompanying table. The basis of the classification is temperature and slag composition. These two factors are often confused in practice with the result that lime in the burden often is increased when what really is needed is more heat in the hearth, or the burden includes an excess of lime which causes the hearth to become cold. By understanding the conditions it is possible to intelligently control the furnace driving and obtain the highest production of iron.

Slags vary in composition from acid to basic or in the language of the furnacemen, from lean to limey. It frequently is difficult in practice to indentify slags due to the fact that the two extremes may be encountered without any of the intermediate con-

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ditions being present. Each slag encountered is usually a combination which is entirely different from either of the extremes.

The classification has its foundation in the slag temperature and the type of slag. Temperature has three subdivisions; namely, hot, medium hot, and cold; two extreme conditions and one half way between. Slag type has two sub-divisions, acid and basic. These are the extremes in slag composition.

The types of slag range from an all glass slag to a slag so high in lime that it slacks to a powder when exposed to the action of the atmosphere. When the lime predominates the first appearance is a small white center which gradually extends over the entire fracture of the slag sample. When the alumina is high the center appears light blue and this gradually extends over the entire area in the same manner. Sometimes a mixture of both are found. This type is a heavy, solid dense slag, almost rock-like in appearance.

Fig. 5 shows the glass type. The samples at the extreme right are all glass. The next two flushes were hotter and the lime began to appear as shown by the white center. This type of slag will carry large volumes of gas in solution.

Fig. 4 shows the other extreme in the slag series. This type is extremely basic, in fact some of the samples turned to powder on standing. This type of slag does not carry much gas in solution but it emits a dense fume, as will be explained.

The temperature indicators in blast furnace slags are iron, manganese, and sulphur. The orderly classification of slags from a practical standpoint is clearly shown by these three constituents. The classification is here again based on the extreme types and one midway between. Hot lean slags are green; cold lean slags are black. Manganese gives the hot slag its green color; iron gives the cold slag its black color. The medium type is a brown color. This color also is due to manganese. When the slag is lean and extremely cold it is often blown out in the form of fine, small, black, shiny balls, or shot by the cinder runner.

Medium types of slags are more difficult to identify. This type of slag does not show any glass but is usually all white, all blue, or mixtures of blue, white, brown, and green glass edges. Hot slags have a vitreous luster, cold slags are dull. These slags are hotter than the lean types due to the presence of lime and alumina. Fig. 8 shows this type of slag which is often called the stoney type.

Basic slag types show the presence of lime. When the lime content is high, and the hearth hot, the slag is pure white. Sometimes small black balls of metallic iron may be seen embedded in the high rounded top. When slag of this type becomes cold it is dull and black. When limey slags become extremely cold they are difficult to fuse; when they come out of the furnace the flow is sluggish. Frequently the cold slag has to be pulled away from the cinder notch with hooks or forks to keep the runner clear.

Sulphur gas and the quantity that the slag will hold in solution depends upon the composition of the slag and its temperature. A lean, hot slag will hold the largest volumes of sulphur gas dissolved in the slag. When this type of slag is cold, the volume held in solution is low. A large portion of the sulphur goes into the iron when the furnace is cold and lean. The amount of sulphur gas that a slag will hold in solution also is affected by the amount of sulphur in the raw materials. With Lake Superior ores and high-quality coke the total sulphur to be removed may be small, whereas with poor coke and pyrites ore the total sulphur may be high.

Hot slags may be further subdivided into hot lean slags and hot limey slags. Sulphur is removed by combining with lime in the form of calcium sulphide, by being carried out as a gas in solution. The largest volumes of gas are carried out by hot slags short of lime. Fig. 5 shows a hot lean glass slag which carried out a large volume of sulphur gas. An extremely hot, all glass slag would carry out more gas in solution even than this slag. The larger the amount of total sulphur going into the furnace, the hotter the slag; the leaner the slag, the larger the volume of gas held in solution. Glass slags are fluid and watery, hence all the gas held in solution escapes easily before the slag sample solidifies. Lean slags generally solidify with a level or sunken top in the slag box. The more gas the slag carries in solution, the more the top of the slag sample will be sunken.

Classification of Blast Furnace Slags

TYPE	HOT	MEDIUM HOT	COLD
		Acid	
All glass.	*Green Glass:* Light green to dark green glass.	*Brown Glass:* Vitreous light brown to dull dark brown.	*Black Glass:* Shiny black glass; glass shot.
Glass: Blue and white specks.	White specks (lime) in green glass. Blue specks (aluminum) in green glass.	White specks in brown glass. Blue specks in brown glass.	Vitreous black glassy slags; black glass shot.
Glass: Blue or white center.	Blue center; green border glass. White center; green border glass.	Blue center; brown border glass. White center; brown border glass.	Black glass slags.
Glass edges.	White with green glass edges. Blue with green glass edges.	White with brown glass edges. Blue with brown glass edges.	Clouded black slags; dull glass shot.
All white or all blue.	Cream white lime silicate slag. Blue aluminum silicate slag.	White and brown silicate slags. Blue and brown silicate slags.	Clouded black slags.
Mixtures of white and blue.	White edge, blue center; various combinations of white, blue, and green glass.	White edge, blue center; various combinations of white, blue, and brown glass.	Clouded black slags.
Stony slags.	Heavy, solid, blue, or gray stony slags.	Heavy blue, gray, and brown stony slags.	Heavy dull black stony slags. Dry black shot.
Dry slags. Losing vitreous lustre.	Hot lime slags.	Brown and olive green lime slags.	Cold dry black slags; no cinder at flush time.
		Basic	
Dry grainy slags.	Dry white hot lime slags. (Grainy).	Heavy dry brown or dark olive green slags. (Grainy.)	Heavy dull black slags. Very dry. Huge heavy cakes.
Powdered slags.	Slags which go to powder when left in the air. White or gray powder.	Heavy dark brown basic slag. Extremely dry and grainy.	Extreme heavy, dry, crusty, black slags.

Hot lean glass slags carry the most gas in solution because the shortage of lime leaves the sulphur in the free state which is the ideal form to be carried out as a gas in solution. As the slag type advances toward the hot lime type, the silica is reduced to silicon, and the lime is left free to combine with the sulphur, which in turn reduces the amount of gas held in solution. Thus the tendency exists for the volume of sulphur gas in solution to decrease as the slag becomes hotter and more basic. The lime combines with the free sulphur to form calcium sulphide. As the temperature increases practically all the free sulphur combines with the lime unless there is an excess of total sulphur going into the furnace in which case there still may be some free sulphur. Usually on a hot limey furnace with the fusion zone down in the hearth the free sulphur is absorbed.

Some of the white powder deposited on the pen-stock above the cinder notch during a flush when extremely heavy white fumes rose from the slag

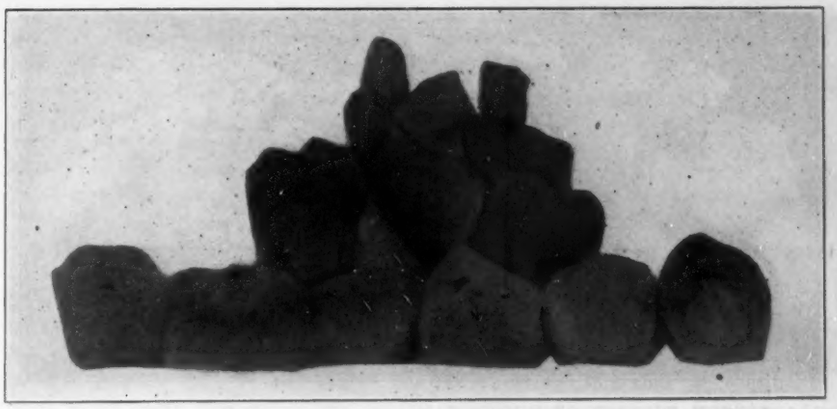


FIG. 4—SAMPLES OF SLAG WHICH IS HIGHLY BASIC AS INDICATED BY THE FRACTURE

to be of the following composition:

	%
Silica	32.68
Alumina	14.66
Lime	47.66
Sulphur	3.54

A comparison of the two analyses shows the silica has increased, the lime has decreased, and the sulphur has decreased; all indicators of a lower hearth temperature. The cause for this change is self-evident. When the hearth became colder less silica was reduced, and, therefore, more silica went into the slag. The lime had more silica to handle, hence, there is less in proportion. Since the silica used more lime, there was less lime to combine with the sulphur. Therefore, some of the sulphur was left free to go out in the slag as sulphur gas in solution. This is shown by the drop in the sulphur in the slag from 3.84 to 3.54 per cent. This slag had a strong smell of free sulphur rising from the runner at flush time.

Cold slags are of particular interest because they have only an extremely limited capacity for holding gases in solution. As in the case of hot slags they fall into two general classes, cold lean slags and cold limey slags. A cold acid slag will carry out more gas in solution than a cold basic slag. A typical analysis of a cold lean slag follows:

IRON					
	%	%	%	%	%
Silicon	0.30	0.41	1.71	1.52	1.47
Sulphur	0.055	0.054	0.024	0.034	0.033

SLAG	%
Silica	34.54
Alumina	12.00
Lime	44.40
Magnesia	6.56
Iron	0.70
Sulphur	1.48

The interpretation of this slag analysis shows why only a small amount of gas is carried out in solution. Hot slags, either acid or basic, have a greater capacity for carrying gases in solution than the same slags would have cold. As the temperature decreases and as the slag becomes more basic, its capacity for carrying dissolved gases decreases directly in proportion. In the example just cited,

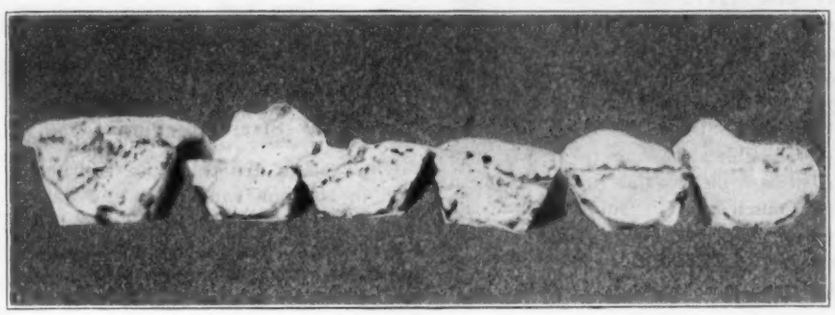


FIG. 3—TYPICAL COLD AIR SLAG SAMPLES. THE ESCAPE OF FREE SULPHUR GAS CAUSED THE SLAG TO BUBBLE OVER THE TOP ON COOLING

was collected and an analysis made. The results showed 4.20 per cent lime and 10.73 per cent sulphur. No free sulphur was present when this slag was drawn. The analysis indicates the sulphur was all combined with the lime in the form of calcium sulphide and that the slag was supersaturated with it in solution. When the slag was drawn, and came out into the air under conditions of reduced temperature and pressure, the calcium sulphide was thrown out of solution and rose from the slag in clouds of heavy white fume. The analysis of the slag sample from this flush, which follows, was low in silica, high in lime, and high in combined sulphur.

	%
Silica	31.64
Alumina	14.00
Lime	49.36
Sulphur	3.84

The next flush showed the slag much colder and with a considerable quantity of gas in solution. The sample from this flush showed the slag

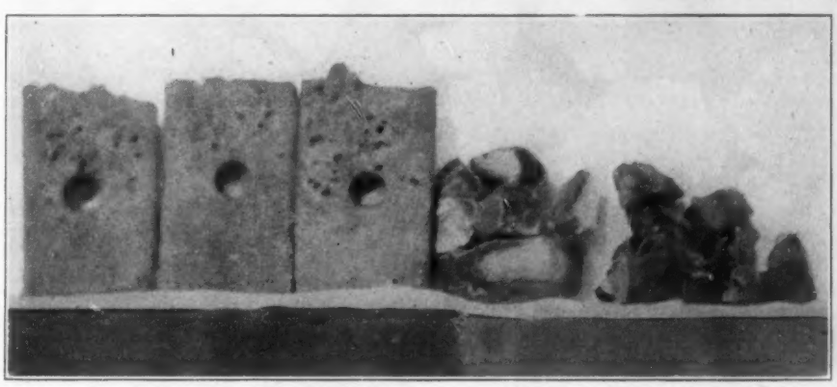


FIG. 5—SAMPLES OF GLASS-TYPE SLAGS. CINDER OF THIS CHARACTER USUALLY CARRIES LARGE VOLUMES OF SULPHUR GAS IN SOLUTION

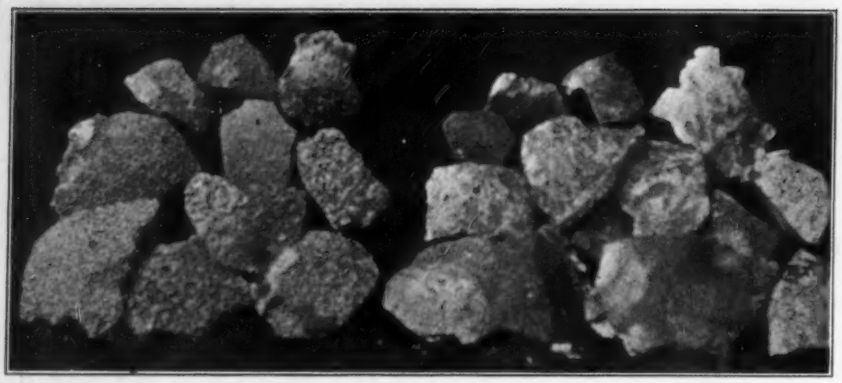


FIG. 6—BOTTOM SURFACE OF DIPPER SAMPLES. THOSE AT THE LEFT SHOW GAS CAVITIES DUE TO FREE SULPHUR

the slag is a cold lean slag. The extremely low silicon and high sulphur in the iron indicate a cold hearth temperature. The low sulphur in the slag shows a large part of the sulphur is free. The fact that such a large amount of it has gone into the iron verifies the statement. Moreover, at flush time this slag, which was thin, fluid and watery gave off an extremely strong sulphur smell showing a part of the free sulphur to be carried off in the slag as dissolved gas. The high percentage of iron in the slag indicates the low temperature of the slag; the brown color due to the manganese, and the low sulphur are further proofs.

Following is a typical example of a cold lime slag.

IRON

	%	%	%	%	%	%
Silicon	1.41	1.26	1.13	1.01	0.78	0.55
Sulphur	0.036	0.037	0.039	0.040	0.049	0.079

SLAG

Silica	35.38
Alumina	12.11
Lime	41.80
Magnesia	8.13
Iron	1.14
Sulphur	1.44

The foregoing slag is an extreme case of cold lime. The degree of coldness is indicated by the high iron content. This slag carried out little gas in solution; in fact, the slag was so cold at times it could not be drawn from the furnace. It will be noted that the bases, that is, the lime and magnesia, total 49.93 per cent, an amount which is too high for this cold condition. The sole cause of the trouble is too much lime on a cold hearth. The lime becomes even greater when the hearth is heated up, for this increase of hearth temperature reduces the silica and this in turn frees more lime and aggravates conditions still further. The first step is to reduce the amount of lime in the burden, then increase the hearth temperature which will release more lime for the sulphur and also make the slag more easily fusible. In the present condition this type of slag is too cold to carry much gas in solution and the greater part of the sulphur goes directly into the iron as shown by the following analysis of next casts.

IRON

	%	%	%	%	%	%
Silicon	0.84	0.84	0.65	0.52	0.90	1.01
Sulphur	0.035	0.036	0.078	0.087	0.070	0.082

SLAG

	%
Silica	36.00
Alumina	13.26
Lime	41.20
Magnesia	7.19
Iron	0.76
Sulphur	1.25

This slag was not lean as might be supposed by the high silica content but was cold. As will be seen the percentage of sulphur is low in the slag but high in the iron. Little gas was carried out in solution by this slag.

The volume of gas carried in solution by a molten slag is indicated in various ways. An excess of free sulphur gas always is indicated by a strong choking sulphur smell rising from the runner. This is generally in the form of a thin blue smoke as shown in Fig. 2 which makes the eyes burn and smart.

The flames that burn on the surface of the slag as it runs down the slag runner also is an indicator. Slags high in free sulphur emit small serpent-like tongues of flames while those carrying but little sulphur gas in solution are large yellow flames.

Hot basic slags have practically no sulphur smell. Instead of the thin blue smoke large volumes of heavy white fume rise from the slag. The sulphur is in the combined form which has no smell and the heavy white, dense, fog rising from the slag is composed of fine particles of calcium oxide or lime and calcium sulphide. This type of slag carries practically no gas in solution for the sulphur exists largely in the combined form.

Why Slags Are Porous

Glass slags are thin and the gases held in solution can easily and quickly escape from the molten slag. Basic slags are thick and viscous and the gas held in solution cannot escape so easily. That is the reason why gas will tend to escape from molten basic slags long after the slag has been poured into the sample box or slag ladle. It also explains the porous, spongy, structure of some basic slags. The gas cavities indicate the gas still held in solution in the slag is trapped in the mass as it solidifies.

Lean slags are thin, watery, and fluid. They release the gas held in solution quickly. It is a common occurrence with a more basic slag for the slag to overflow the runner due to the escaping gas held in solution. Sometimes this excess sulphur imparts a greasy, scummy, appearance to the molten slag.

The effect of gas held in solution in slags is shown in the cold slag sample. Lean slags have a deep sunken top, because the gas quickly escapes from the thin fluid slag. Limey slags are thick and viscous and the gas cannot escape so easily. Often the slag cools and forms a crust over the top holding the gas inside. The gas pressure causes cavities to form and the top to rise in a rounded form.

This condition is shown at the

FIG. 7—TOP SURFACE OF SLAG CRUSTS WHICH REMAINED IN THE DIPPER AFTER THE SAMPLE WAS TAKEN

extreme right of Fig. 4. If the slag is extremely hot and fluid the gas may have time to escape, even though of a basic type. In other words, it depends mainly on slag temperature, whether the gas will be trapped and the cold sample be porous.

Another practical indication of the amount of gas held in solution in the slag is shown by the character of the crust left in the slag dipper. Fig. 7 shows the top surface of a large number of dipper crusts. When hot slag strikes a cold dipper it throws the gas held in the slag out of solution by chilling the slag. This escaping gas, which is held in large quantities by lean slags, escapes entirely and leaves the bottom surface smooth while in slightly basic slags the free sulphur gas fills the underside of the dipper crust with small blowholes or gas cavities. These may be seen at the left of Fig. 6, which shows the underside of dipper crusts.

On hot limey slags most of the sulphur is in the combined form hence there is only a limited amount of gas held in solution. The absence of gas cavities is shown in the dipper samples at the right of Fig. 6.

Another indicator of the amount of gas held in solution is that a lean slag leaves practically no runner crust since the gas quickly escapes into the air and the slag itself is thin and fluid. In basic slags, however, the escaping gas has a tendency to make the slag boil over the slag runner. The high, foamy crust shows that the slag carries a large quantity of free sulphur gas in solution. On the other hand if the runner crust is thick and heavy with a deep, narrow channel, this indicates a stony type of slag and only a small amount of free sulphur gas in solution as depicted by the samples shown in Fig. 8.

Cold air is used to quickly cool the hearth for the purpose of keeping down the silicon content in the iron. Cold air also frees the sulphur already combined with the lime and prohibits any further action in this direction. This result is accomplished by directly chilling the hearth which raises the fusion zone into the mantle or higher depending on how long the cold air is permitted to enter the furnace. Chilling the hearth prevents the reduction of silica which uses the lime to form calcium silicate. This in turn leaves the sulphur free to go into the iron and be carried out as a gas in solution in the slag. It is in this type of slag that free sulphur gas in solution is vividly shown. A slag may be dense and most of the sulphur be carried out as calcium sulphide. Continued use of cold air quickly breaks down this combination and frees the sulphur. A typical cold air slag is illustrated in Fig. 3.

The samples show the combined sulphur has been changed to free sulphur gas in solution and that the gas has filled the slag with blowholes as it tried to escape when the slag cooled. This peculiar behavior has been termed slag creep because long after the slag has hardened and formed a crust the pressure of the gas from the inside pushes the molten slag out from the inside and it slowly creeps much like a snail pushes itself in and out of its shell. The gas pressure has piled this molten slag from the inside high upon the top of the slag sample.

This example demonstrates that cold air breaks up the calcium sulphide and prohibits its formation by keeping the silica unreduced. This action reduced the amount of available lime for the sulphur and leaves the sulphur free to go into the iron and into the slag as free sulphur gas.

Slags made from a cold hearth and a high fusion zone generally contain a large amount of dissolved gas in solution. The same general principles however apply here that lean slags carry out considerably larger volumes of gas than basic slags. The effect of a high fusion zone is shown by the top heat. Cold air is the most important factor in raising the fusion zone, and is directly responsible for the breaking down of the calcium sulphide and promoting the formation of large quantities of sulphur gas.

A typical example of a high fusion zone and cold air follows:

The furnace was cold at 5:45 a. m. as seen from the analyses of the iron. At 7:50 a. m. 32 extra skips of coke were charged. The silicon increased from 0.64 to 0.80 per cent and cold air was turned in the bottom. The top heat at 7:50 a. m. was 350 degrees Fahr. Twelve hours later at 7:40 p. m. the top heat was 650 degrees Fahr.; the bottom was fairly cold, the fusion zone was up above the mantle, and a larger quantity of free sulphur was carried out in solution in the slag. The analyses of the iron was as follows:

Time	Silicon	Sulphur	Top heat, deg. Fahr.
5:45 a. m.	0.64	0.078	.....
*7:50 a. m.	.....	.....	350
10:50 a. m.	0.80	0.057	.....
3:55 p. m.	1.13	0.042	.....
7:40 p. m.	.....	.....	650
8:35 p. m.	1.15	0.062	.....
1:00 a. m.	0.80	0.052	.....

*32 extra skips coke charged.

The analyses show the extra coke consumed in the middle of the furnace, a fact which is verified by the increase of the top heat from 350 to 650 degrees Fahr. The high sulphur in the iron shows the cold air chilled the hearth and prevented the lime from combining with the sulphur. These conditions made available large quantities of free sulphur for the slag to carry out in solution.

Slags from furnaces using Lake Superior iron ores carry less gas in solution than slags from merchant furnaces using scale, pyrites cinder, and blue billy ores. This fact is illustrated by the combined sulphur shown in the following analyses:

FIG. 8—EXAMPLE OF STONY-TYPE SLAGS WHICH ARE HOTTER THAN THE LEAN TYPES BECAUSE OF THE CONSTITUENTS

Element	Merchant furnace slag, %	Lake ore furnace slag, %
Silica	32.40	32.00
Alumina	12.03	14.60
Lime	47.23	47.30
Magnesia	3.26	3.67
Iron	0.23	0.28
Sulphur	3.35	2.01

Examination of the analyses discloses the merchant furnace slag to be hotter than the lake ore furnace slag. This is shown by the lower alumina, the lower iron, and the higher sulphur content. One reason why Lake ore slags do not contain high sulphur is because the sulphur content of the burden is low.

When the slag is run into ladles, gas often will burn for sometime as it escapes from the surface. At other times no gas will escape. As previously discussed the slags which carry large quantities of gas in solution are hot lean slags and these are the slags which show the escaping gas burning at the surface, or as gas jets from a crack in the skull of the ladle.

Large Uses of Steel In Small Ways

SCIENTIFIC development which is destructive is almost always closely followed by corrective or constructive development. In time of war this play of opposing forces is particularly apparent. The airplane bomber is opposed by the anti-aircraft gun. Destructive gases are oposed by ingenious gas masks. In time of peace these complementary forces also exist. The acetylene torch which in the hands of a safe breaker is a destructive force is opposed by a metallurgical alloy which resists the torch action.

The demand for increased speed of transportation has brought with it a record of increased accidents. A combination of the medical and mechanical sciences has developed highly ingenious artificial arms and legs in an attempt to offset the effect of this increased toll of accidents. Today it is possible to take a man with double amputation above the knees and in the phrase of the trade "put him on his feet." This means that through the use of artifiicial legs he is able to walk about, to drive a standard make of automobile without special attachments, and even work in a machine shop.

The advance in articifical limb design has been going ahead quietly for many years until the present day product is a specimen of mechanical and metallurgical science of the highest order. Many people who have had major operations have been so successfully rehabilitated that detection is difficult. Steel more than any other material is responsible for this result. The joints of practically all artificial limbs are made of steel. In the better designs these joints are ball bearing.

The majority of leg amputations are below the knee. When this is the case a steel ankle joint and two steel knee joints are used. Each knee joint has an upper and lower strap, made of drop forgings, fastened to the joint itself, which is a standard type of ball bearing joint. The ankle joint usually consists of an upper and lower bolt made of forgings each fastened through ball bearings to a cylinder or forged bar cross piece. When the amputation is above the knee a knee bolt joint is used which is similar in its purpose to the two side knee joints, but which is one unit with a bolt running through from side to side. The modern knee joint is intricate affair for its design furnishes automatic control of the lower limb. Such a joint has many steel parts in addition to the joint itself. A lever known as a back check extends from the joint to the back of the calf. In such a

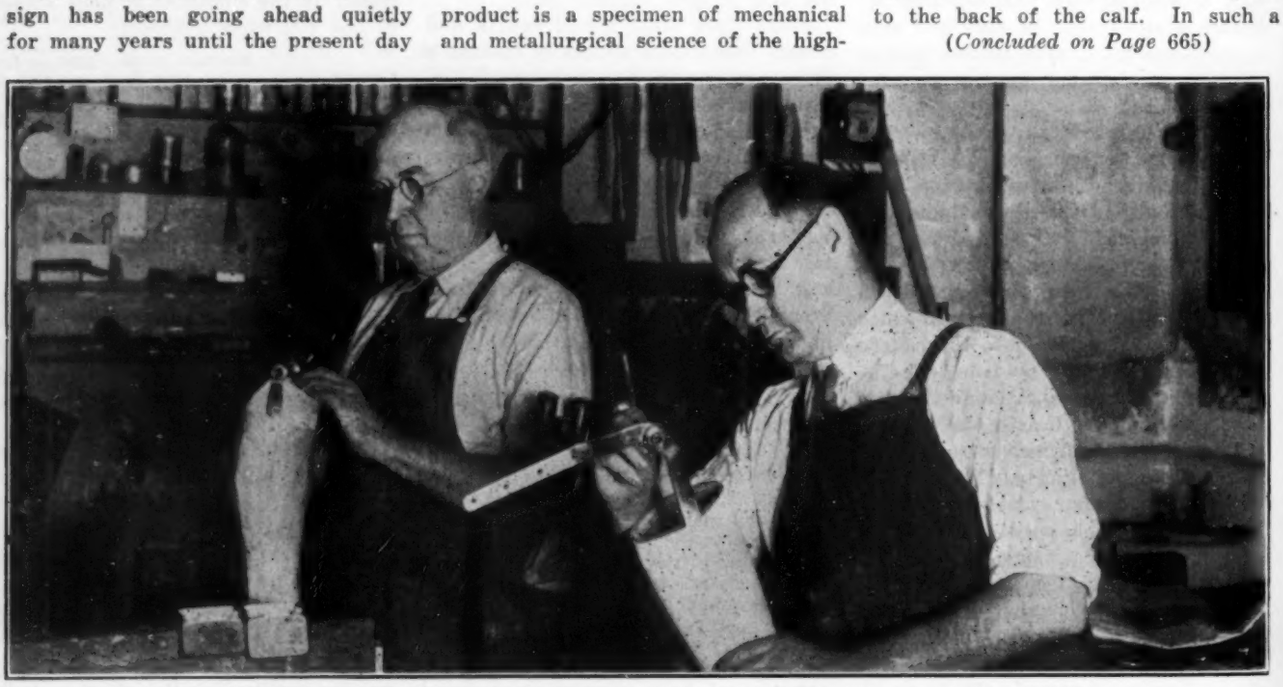
(*Concluded on Page* 665)

Artificial Limbs

THIS is the seventy-second of a series of articles dealing with some of the obscure uses of steel which go far toward absorbing the great American tonnage.

The first article on "corsets" appeared Nov. 22, 1923. *Other articles appearing fortnightly since are:*

Pins	*Pens*
Cotton Ties	*Steel Wool*
Toys	*License Plates*
Spinning Rings	*Hypodermic Needles*
Card Clothing	*Shoe Steel*
Tie Plates	*Crushed Steel*
Tacks	*Skates*
Knives and Forks	*Needles*
Surgical Instruments	*Phonograph Needles*
Fence Posts	*Golf Clubs*
Eyeglass Cases	*Mechanical Pencils*
Fishing Tackle	*Burial Caskets*
Dental Drills	*Telephones*
Pocket Knives	*Radio Towers*
Rat Guards	*Brushes*
Snap Fasteners	*Electric Bells*
Paper Clips	*Bookbinder Wire*
Steel Vests	*Sucker Rods*
Electrical Conduit	*Watch Hands*
Radiator Furniture	*Steel Furniture*
Notebooks	*Highway Markers*
Metal Beds	*Camp Cots*
Bolts and Nuts	*Flexible Shaft*
Metal Lath	*Wood Pipe*
Tin Cans	*Buttons*
Umbrellas	*Sheet Metal Screws*
Steel Barrels	*Rivets*
Washers	*Billboards*
Overall Trimmings	*Razor Blades*
Bird Cages	*Metal Strapping*
Turnbuckles	*Lace Tips*
Steel Derricks	*Oil Cups*
Handle Cores	*Ventilators*
Camp Stoves	*Toy Autos*
Bottle Caps	*Safes*



THE STEEL JOINTS ARE CAREFUULY FITTED TO THE HOLLOWED OUT WILLOW FORMS

Editorials

Reclassifies Pig Iron Production

WITH its first half year pig iron production report, just announced, the American Iron and Steel institute has initiated several important changes in classification of tonnage. Ferroalloys made both by blast furnace and electrical methods heretofore have been included under the heading of coke pig iron. Beginning with 1926, and revising backward into 1925, ferroalloys have been removed from coke iron and given an individual listing. This change results from a suggestion made to the institute last year by pig iron producers.

Except statistically, the segregation of ferroalloys appears not to affect the general relationship of alloys to pig iron. Including the for sale or merchant ferroalloys, total merchant pig iron amounted to 4,903,422 gross tons, or 24.496 per cent of the grand total of blast furnace production. Excluding ferroalloys, merchant iron output represented 23.733 per cent. In other words, the for sale ferroalloy production amounted to only 0.763 per cent of the total pig iron production. How important such a small percentage may become in influencing pig iron markets remains for the future to disclose.

In a further effort to make its figures more valuable, the institute has added one new classification, this being headed "Miscellaneous grades of pig iron and direct castings." In general, the 1926 first half production showed few striking features. Output was the best since the first six months of 1923. With the exception of forge iron which decreased 46 per cent and malleable which increased 17.8 per cent, all other grades showed increases close to the 4.54 per cent general gain of the 1926 first half over the 1925 first half. Charcoal pig iron output continued to decline and aggregated only 77,361 tons, against 97,132 tons a year ago. Ferroalloys, with 336,345 tons, was an increase of 42,222 tons or 14.3 per cent over the 294,123 tons of the corresponding period of 1925.

More Car Business in Prospect

WITH less than 100 freight cars placed by domestic roads, the August showing stands as one of the poorest on record. This brings the total for the year as of Sept. 1 to approximately 41,350 cars, and, following as it does a lean year in 1925, car builders would be sorely pressed in meeting operating expenses were it not for the fact that passenger car buying has been unusually good. In fact, it has been at a rate that promises to bring the total for the year up to at least the 2200 total of 1925, or well above the average for the past ten or 12 years.

The coming season will likely bring a substantial improvement in freight car buying. Several sizeable lists are pending which should bring business in September back with considerable force, but builders hesitate to predict precisely what the closing months of the year will bring forth. They are confident that heavy buying will set in eventually. For more than ten years freight car buying has been well below normal.

The railroads are moving their freight cars at express rate of speed, and it is believed they will be forced before many more months elapse, to make substantial purchases. This belief finds special emphasis in the improving financial status of the railroads.

Publicity Proposals Not Radical

ALTHOUGH considerable stir was caused by his utterance, Prof. William Z. Ripley, noted economist of Harvard university, advanced revolutionary in his proposal for more adequate publicity for the financial status of corporation. Ever since the passing of the day, some quarter of a century ago, when railroads and industrial companies hedged themselves about with secretiveness respecting their affairs, the tendency has been toward more and more comprehensive income and balance sheet reports. That there still is a long way to go before ideal conditions in this regard will be attained no one can doubt. Perhaps Professor Ripley's strictures may speed the day when annual reports will be presented in more detail.

In the matter of comprehensive reports important iron and steel companies are conspicuous for their leadership. The pace was set by the United States Steel Corp. at its inception and its pamphlet annual reports are perhaps the most detailed issued by any company. Other iron and steel companies likewise issue full reports of their finacial condition. In the case of one large steel company, mentioned by Professor Ripley as being ambiguous as to the basis of property appraisals, it was promptly shown by the presi-

dent of the company that such information had been given in the report of 1923 and subsequently referred to.

Professor Ripley's suggestions have nothing in them to disturb investors, and the agitation of Wall street over them has had little foundation. His recommendation, however, that the federal trade commission set up an inquisitorial board for compelling corporation information, cannot be commended. In the first place, even though the commission has legal authority for such an act, it proved too paternalistic to get the best results. Moreover, the majority of the commission has expressed itself as opposed to such a move. Full publicity of matters affecting stockholders is to be desired in these days of widely held securities. But the best way to accomplish it is through a process of education and by example of companies and not by government edict.

Landis Plan Again Tested

UNION building trades employes, probably not more than 100, have walked out on a construction job in Chicago, intending to plunge all building projects under the award of the Landis citizens' committee into a $25,000,000 tieup. The Landis award, among other things, permits nonunion tradesmen to be hired on building jobs with union men. The strikers have no grievance as to hours or pay. They simply want to put all Chicago building upon a closed shop basis and thus to upset the Landis committee's plan to protect building.

Not all of the union building workers on the job joined in the strike. It is probable little headway will be made and that arbitration will be arranged. The support of the Landis committee has been promised to all contractors where strikes are called. The committee will undertake the hiring of nonunion men in all trades. Engineers on the job say that under present conditions no delay need be encountered in the flourishing building activities in prospect. The organization of the Landis committee is well entrenched, and is able to cope with just such situations as this.

British Steel Losses Piling Up

LOSS of iron and steel production in Great Britain continues to mount, due to the coal strike. During the four months the strike has been in progress, the output of pig iron has totaled 164,000 tons, whereas in the months immediately preceding the strike, production was at the rate of 536,000 tons, or for four months, 2,144,000 tons.

The loss in steel tonnage is even greater. In the four months since May 1, when the coal strike was begun, a total of only 172,000 tons of steel ingots and castings was produced. If the rate of production in the several months preceding the strike had been maintained, the industry would have had 2,644,000 tons to its credit for the last four months. The loss here is approximately 2,462,000 tons of steel ingots and castings.

Based on present market prices in Europe, the loss in iron and steel tonnage represents a value close to $100,000,000.

What Our Readers Are Thinking

Why Carnegie Went Into Steel Business

THE close connection existing between Pittsburgh and the Pennsylvania railroad has been demonstrated in many ways, two of which are outstanding and woven into their common destiny. First, Pittsburgh was the goal toward which the Pennsylvania railroad was driven over the mountains from the seaboard, and, when this goal was reached, Pittsburgh became the base for operations that pushed the Pennsylvania westward to the Mississippi and to points on the Great Lakes. Second, the need for manufacturing steel rails and other steel products for Pennsylvania railroad used in and near Pittsburgh led Andrew Carnegie, an official of the Pennsylvania railroad, to go into the steel making business here. This momentous decision of Mr. Carnegie's was based on the experience and knowledge gained as a Pennsylvania railroad official; the consequences of this decision are a matter of world record.

The Pennsylvania railroad was originally incorporated under that name by an act of the legislature of Pennsylvania passed March 31, 1823, which authorized the construction of a railroad from Philadelphia to Columbia, Pa., a distance of 80 miles, to be operated by steam power; and is the first oldest railroad on the American continent.

The Pennsylvania railroad was the first to use bessemer steel rails, as well as the first to build locomotives with steel fire boxes; also the first railroad in the world to experiment with and adopt the air-brake and automatic coupler; likewise the first to instal the perfected electro-pneumatic block system of signals, and the first to use the electro-pneumatic interlocking device, to insure the safe and quick handling of its passenger and freight trains.

The first sleeping car service in this country was inaugurated on what is now known as the Cumberland Valley division of the Pennsylvania railroad. The first limited train in this country and, in fact in the world—"The Pennsylvania Limited"—has been in continuous operation for 45 years.

The Pennsylvania was the first to build and use all steel passenger and freight equipment and to install track tanks by which water could be taken by locomotives without a stop.

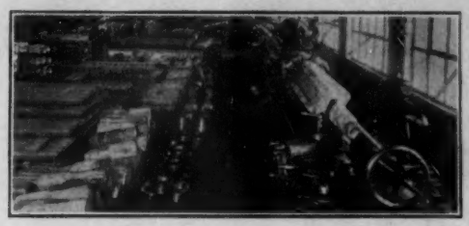
JOHN J. KOCH, *traffic manager, Pennsylvania railroad, in Pittsburgh First, official organ of the Pittsburgh Chamber of Commerce.*

The Reader's Page

Vol. LXXIX, No. 11 IRON TRADE REVIEW Sept. 9, 1926

An Advance Glimpse of a Great Industrial "Show"

IRON TRADE REVIEW will feature in its next issue, Sept. 16, details concerning the thirtieth annual convention and exhibit of the American Foundrymen's association, in Detroit, Sept. 27 to Oct. 1. Sixteen pages will be devoted exclusively to the plans, programs, exhibitors, description of their exhibits, miscellaneous information, and photographs; all of the programs will be a guide to assist those who attend. The exhibits will occupy nearly 100,000 square feet of floor space; there will be 260 exhibitors; three buildings have been engaged for the "show" and others will be used for the technical discussions, all at the Michigan state fair grounds. The association, now 30 years, old, celebrates its anniversary with one of the greatest industrial exhibits ever staged. World-wide interest is manifest, this being the second International Foundrymen's congress.



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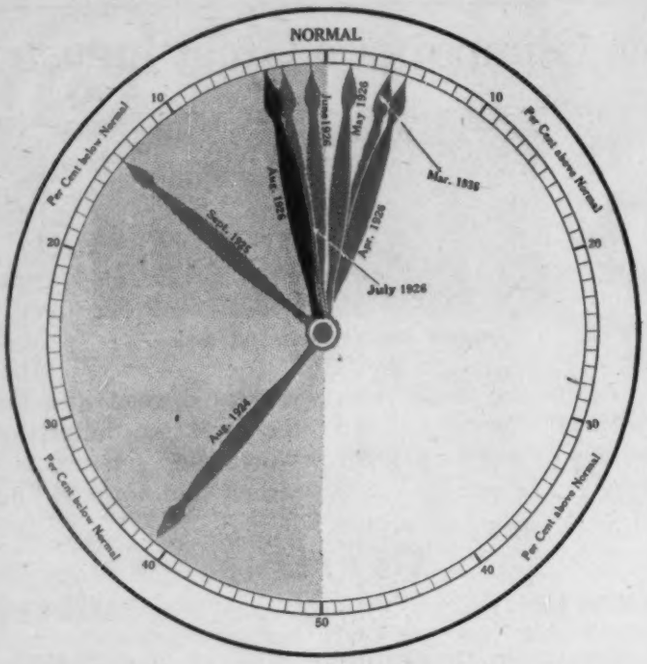
The Business Trend

Blast Furnace

The Dial represents the Blast Furnace Index of Business which is based upon a 40-year record of furnace activity. It is a barometer of general trade.



Business Dial

When 60 per cent of all the country's furnaces are in blast business conditions are normal. The Index is now lower than the normal point on the dial.

Steel Industry Points to Good Fall Trade

By JOHN. W. HILL, Financial Editor

THE period when summer is melting into early autumn is usually one of some uncertainty for business. This year is no exception and business men are searching the horizon for signs of prospects for the coming months. The sustained character of demand and output in the iron and steel industry is one of the most favorable indications at hand.

DURING August there was a loss of only two blast furnaces from the active list. And at the close of the month 215 furnaces were in action. This was 57.8 per cent of the total number of usable furnaces in the country compared with the high mark of 63 per cent in April. The Blast Furnace Business Dial on Aug. 31 stood only 3.7 per cent below normal. One year before it was 17 per cent below.

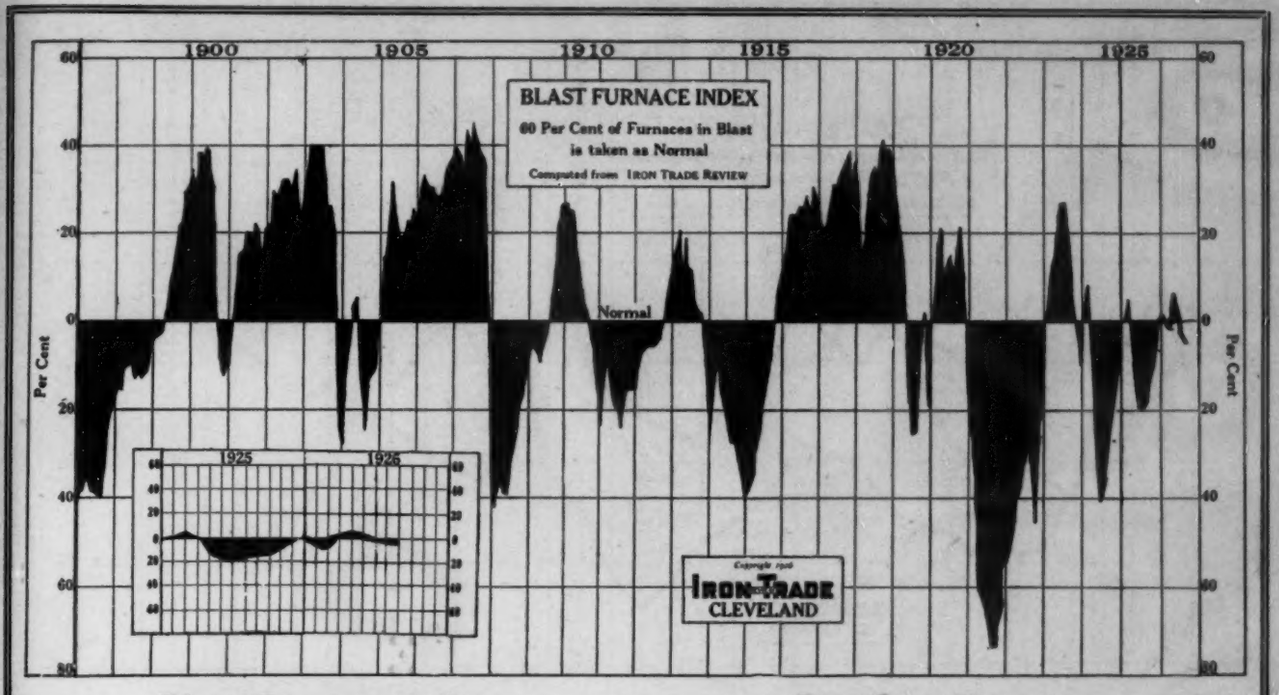
THE decline in the production of pig iron and in blast furnace activity in August was the smallest for any month since the recession began in the spring. This is evidence that the declining movement has nearly run its course. How well the iron and steel industry has maintained its pace during the summer is seen by the fact that in August pig iron output was 17 per cent greater than it was in August, 1925.

REPORTS have appeared in certain quarters that stocks of iron and steel products are piling up in the hands of producers. There is little reason to believe that this is true on any important scale. In the first place, hand-to-mouth buying has been accepted as a new basis in the steel trade. Adhering to this program producers strive to keep production closely in line with consumption. Heavy accumulations of stocks and continuance of big outputs in the face of declining demand would be a complete reversal of this practice.

ONE of the most encouraging factors of the present situation is the amazing prosperity of the railroads. Unprecedented traffic and extraordinary efficiency of the roads have enabled them to show high earnings. Net operating income in July broke all records for that month.

BECAUSE of the heavy wear and tear upon railroad equipment in consequence of the year's big traffic, together with the splendid financial condition of the roads this year, substantial buying from this quarter is expected to give renewed impetus to the steel business during the next few months.

The Business Trend

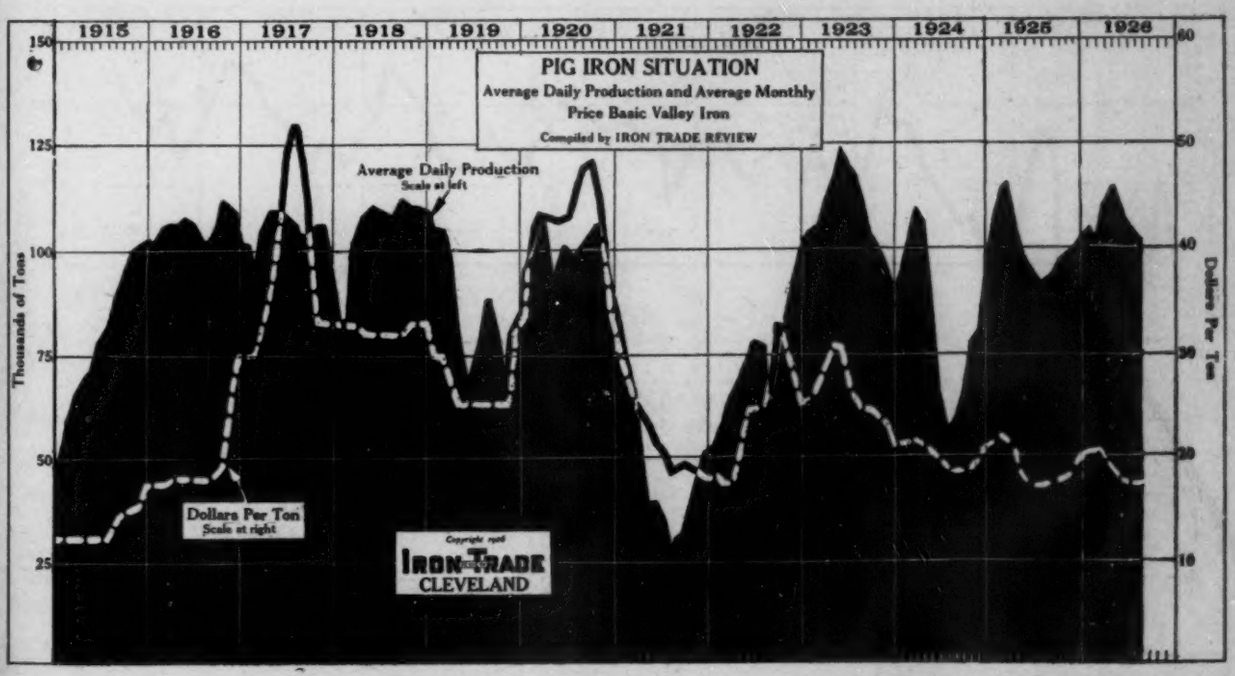


Blast Furnace Index

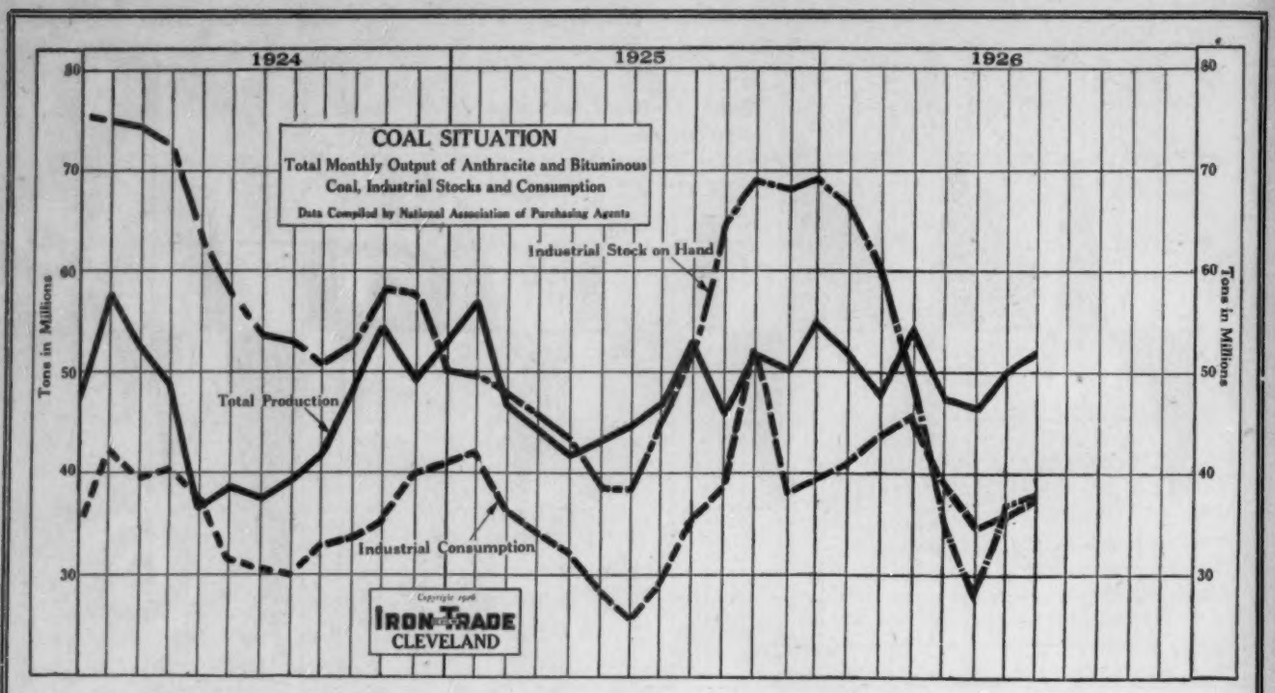
AUGUST brought a loss of two blast furnaces from the active list. At the close of the month there were 215 furnaces making iron compared with 217 one month before. This was 57.8 per cent of the total number of 372 useable furnaces in the country. This compared with 58.4 per cent in July and with the theoretical normal of 60 per cent. The blast furnace index therefore is 3.7 per cent below the normal line which represents a high level of activities for this season of the year. One year ago the index was 17 per cent below normal.

Pig Iron Situation

THE production of pig iron in August declined to 102,857 tons daily average compared with 104,021 tons daily average in July. The drop was but 1.1 per cent. The rate of production in August was the best for that month in any year since 1923, when the daily average was 111,254 tons. Compared with August, 1925, there was a gain of 15,529 tons per day or 17.8 per cent. The drop of pig iron in August was the smallest of any month in the last four months, indicating that the recession has about run its course for the present.



The Business Trend

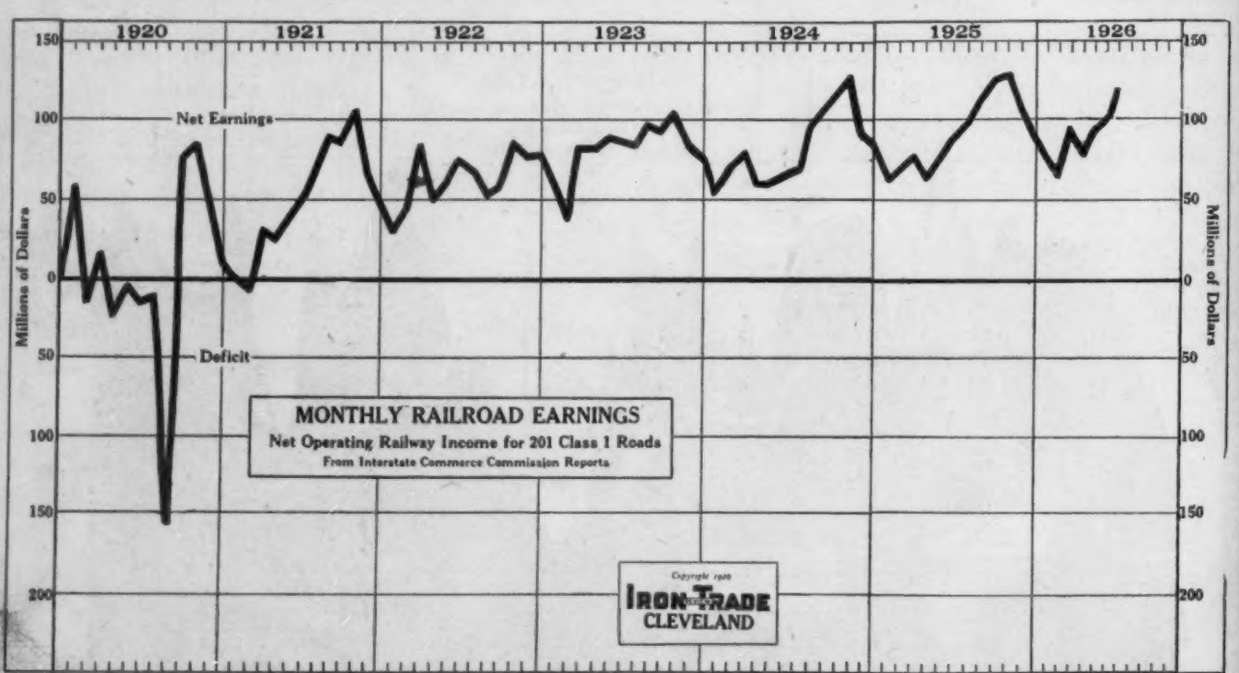


Coal Situation

INDUSTRIAL consumption of coal in July totaled 37,424,000 tons. This was an increase over the 35,541,000 tons in June and reflects sustained activities in most lines of industry. The National Association of Purchasing Agents also estimates a slight increase in the stocks on the hands of the industries. On Aug. 1 the total tonnage of stocks amounted to 37,841,000 tons or 31 days' supply. Steel plants had 24 days' supply. The total production of bituminous and anthracite coal was 51,901,000 tons.

Railroad Earnings

EARNINGS of Class 1 railroads, according to preliminary estimates for July, totaled approximately $116,000,000. This was the largest volume of earnings ever reported by the roads for that month in any year. It compared with $107,335,000 earned in June and with $99,463,000 earned by the roads in July 1925. With traffic continuing at an extraordinary level for this season railroads are expected to show earnings up to $130,000,000 for August and to go even higher the rest of the year.



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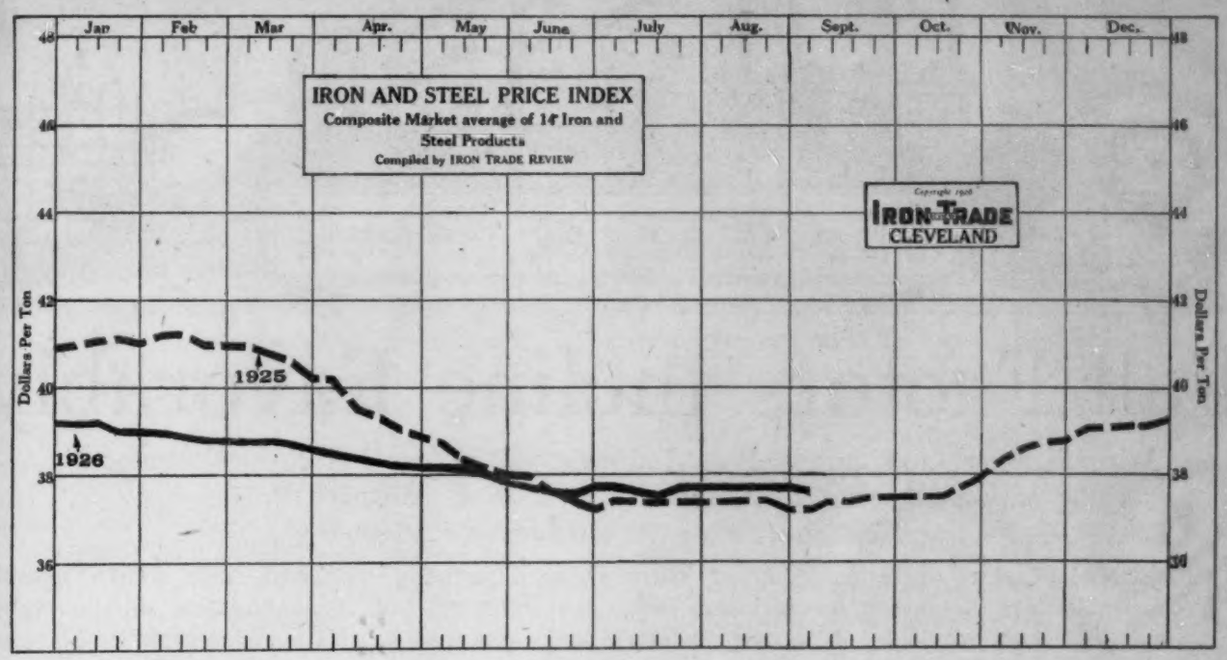
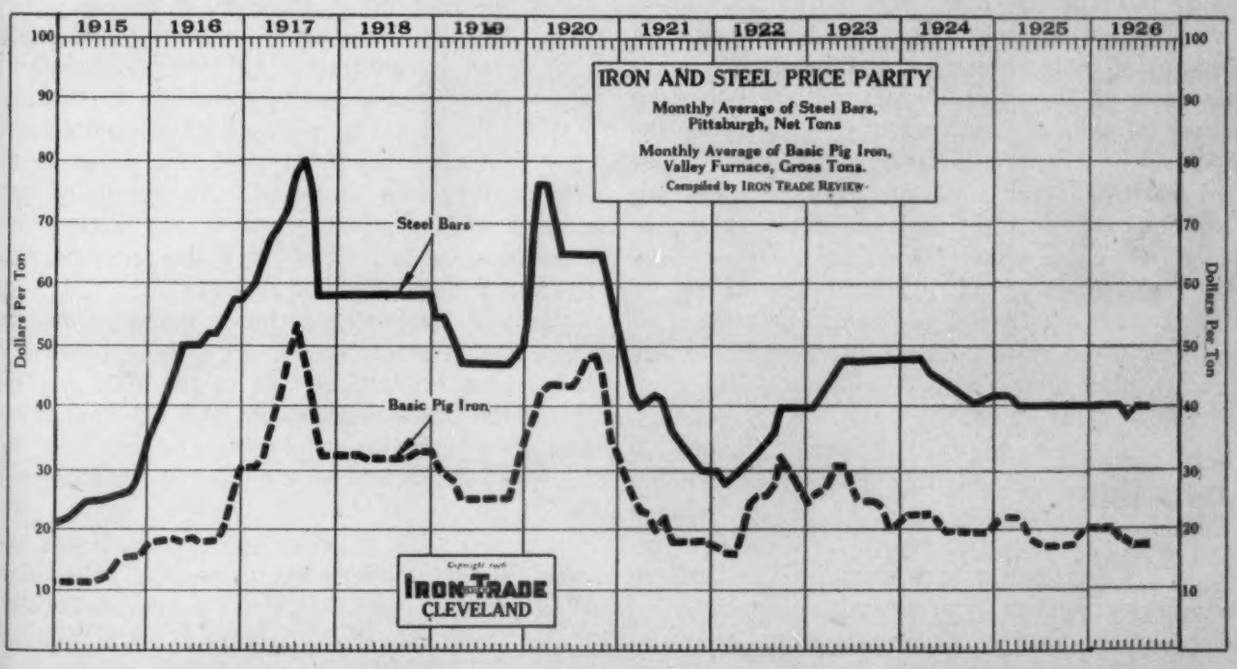


Steel Price Index

AFTER holding steady for five consecutive weeks the composite of 14 leading iron and steel products compiled by Iron Trade Review has dropped slightly . Last week instead of $37.61 a ton as it was the week before, the price was $37.58 a ton. The weakness of pig iron is largely responsible for the slight decline in the composite. For some branches of finished steel the price level has displayed greater firmness. Iron and steel prices now average 42 per cent above the 1913 level.

Steel Price Parity

STEEL bars at Pittsburgh dropped to $38.00 a ton in June. But this loss was quickly recovered and quotations have been holding steadily at $40.00 a ton. Meanwhile, basic valley pig iron has been holding at the low level of around $17.50 a ton. The spread between steel bars and pig iron is now $22.50. One year ago when steel bars were selling at $39.00 a ton and pig iron at $18.25 the spread was $20.75 a ton. Pig iron has been the weakest link in the iron and steel price chain in the last year.



Fall Factors Incline Favorably

With Summer Interruptions Past, Industry Swings Into Fall Stride—Approach of Fourth Quarter Brings With It Test of Advanced Prices—New Sheet Basis Now Generally Adopted

SEASONAL factors—practically all of them favorable—are beginning to influence the iron and steel markets. The last holiday of the summer is a memory, the vacation season nears its end, and fewer interruptions to business threaten. Farm implement manufacturers are swinging into fall runs. Makers of wire products are hopeful that weather conditions will permit outdoor farm work which was deferred from spring. Car builders, facing attenuated works schedules, foresee car programs maturing this month. These promises of heavier consumption are accessions to the demand which has made the opening 60 days of the third quarter outstanding. With inventories continuing low, current shipments being translated into current production, and nothing now on the horizon to indicate any sharp contraction, the industry steps out confidently into the last few weeks of the quarter.

Production of iron and steel also feels the stimulus of more favorable conditions. The various units of the Steel corporation are operating nearer 90 than 85 per cent. A majority of the independent producers hover about the 85 per cent mark. Weather conditions are becoming more propitious for the sheet mills and the leading producer is running above 90 per cent. It develops that the recession in pig iron production in August was less than 1 per cent. Shipments of heavy finished material by Chicago mills in the eight months ended with August exceeded even the same period of 1925.

Price Test Is Near

A period of price testing is undoubtedly approaching. Some tonnage users of heavy finished material whose contract commitments have carried them through the quarter to date have not yet encountered invoices at the firmer prices now being generally quoted. In the past few days some of these users have informally discussed their fourth quarter requirements, but the submission of the higher prices has resulted in their withdrawal. The next ten days or two weeks will probably see these discussions resumed. Meanwhile, the general run of buyers is taking material from the mills without price being a major factor.

Base Widely Adopted

The present cannot be considered a real test of the new bases and differentials on black and galvanized sheets, which carry increases of $1 to $3 per ton on the lighter and reductions of $1 to $7 per ton on the heavier gages, but substantially all makers are now quoting on the new basis. All Chicago district mills have formally announced their adherence. A movement to base full finished, or automobile, sheets on No. 20 instead of No. 22 gage, thereby advancing this grade slightly, is gaining force.

Still Pressing for Pipe

Oil country demand for line pipe continues sufficiently heavy to make price secondary to the matter of delivery. On some sizes of lapwelded pipe, ten weeks is the best delivery now promised. An unusually large number of projects are out in the Kansas and Oklahoma fields. Prices are less regular than the heavy demand would indicate.

Railroad business continues more prospective than real, a condition which usually obtains at this season. Practically all of the 1926 rail contracts have been worked out and rail mill schedules are contracting. Secondary buying is of only fair proportions, the total booked by Chicago mills the past week being 10,000 tons. The Southern Pacific railroad has placed 24,000 tons with the Bethlehem Steel Corp. and subsidiaries of the Steel corporation. Good earnings are taken as a harbinger of satisfactory 1927 budgets, which are beginning to take form. At least one

of the transcontinentals is planning equipment buying and track work on the largest scale in its history.

Resumption of mining in some districts and receipts of imported fuel have relieved the coal situation in England. Orders for iron and steel are piling up and British steelmakers are preparing to increase produuction.

IRON TRADE REVIEW composite of fourteen leading iron and steel products stands at $37.76, as compared with $37.58 last week. The increase is accounted for by the higher prices of No. 28 black and galvanized sheets caused by the change in base now adopted by practically all producers.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Sept. 1, 1926	Aug. 1926	June 1926	Sept. 1925
PIG IRON				
Bessemer, valley, del., Pittsburgh	$19.76	19.76	20.76	21.01
Basic, valley	17.00	17.50	17.75	18.25
Basic, eastern del., eastern Pa.	20.75	21.00	21.75	20.50
*No. 2 foundry, del., Pittsburgh	19.26	19.26	19.76	20.51
No. 2 foundry, Chicago	21.00	21.00	21.10	21.10
*Southern, No. 2, Birmingham	21.00	21.00	21.00	18.50
*Southern Ohio, No. 2 Ironton	20.00	19.90	19.50	19.50
**No. 2X, Virginia furnace	23.00	22.75	23.00	23.00
**No. 2X, eastern del., Phila.	22.26	22.01	22.76	21.86
Malleable, valley	17.50	17.50	18.00	18.75
Malleable, Chicago	21.00	21.00	21.10	21.10
Lake Superior charcoal, Chicago	29.04	29.04	29.04	29.04
Gray forge, val., del., Pittsburgh	19.01	19.01	19.26	19.86
Ferromanganese, del., Pittsburgh	92.79	92.79	92.79	119.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	3.15	2.85	2.70	3.45
Connellsville, foundry, ovens	4.25	3.60	3.75	4.20
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	36.00	36.00	36.00	34.25
Sheet bars, open-hearth, Pittsburgh	36.00	36.00	36.00	35.00
Billets, open-hearth, Pittsburgh	35.00	35.00	35.00	35.00
Wire rods, Pittsburgh	45.00	45.00	45.00	45.00
FINISHED MATERIAL				
Steel bars, Pittsburgh	2.00	2.00	1.90	1.95
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, Philadelphia	2.27	2.27	2.22	2.27
Iron bars, Philadelphia	2.27	2.27	2.22	2.12
Iron bars, Chicago, mill	2.00	2.00	2.00	1.90
Beams, Pittsburgh	2.00	2.00	1.90	1.90
Beams, Philadelphia	2.32	2.32	2.22	2.17
Beams, Chicago	2.10	2.10	2.10	2.10
Tank plates, Pittsburgh	1.90	1.90	1.90	1.80
Tank plates, Philadelphia	2.22	2.22	2.22	2.07
Tank plates, Chicago	2.10	2.10	2.10	2.10
Sheets, black, No. 24, Pittsburgh	3.00	3.10	3.10	3.15
Sheets, blue anl., No. 10, Pittsburgh	2.30	2.30	2.35	2.30
Sheets, galvanized, No. 24, Pittsburgh	3.85	4.30	4.30	4.20
Sheets, black, No. 24, Chicago	3.15	3.25	3.35	3.35
Sheets, blue anl., No. 10, Chicago	2.45	2.45	2.55	2.45
Sheets, galvanized, No. 24, Chicago	4.00	4.45	4.55	4.45
Wire nails, Pittsburgh	2.65	2.65	2.65	2.65
Wire nails, Chicago	2.70	2.70	2.70	2.70
Tin plate per base box, Pittsburgh	$5.50	5.50	5.50	5.50
OLD MATERIAL				
Heavy melting steel, Pittsburgh	17.75	17.75	15.85	19.00
Heavy melting steel, eastern Pa.	17.25	16.75	15.25	17.25
Heavy melting steel, Chicago	14.00	14.00	12.65	16.45
No. 1 wrought, eastern Pa.	17.00	17.25	17.00	18.25
No. 1 wrought, Chicago	14.85	14.75	12.65	17.05
Rails for rolling, Chicago	17.25	17.25	15.10	19.00

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (Sept. 8, 1926)	$37.76
Last week (Sept. 1, 1926)	37.58
One month ago (August, 1926)	37.61
Three months ago (June, 1926)	37.69
One year ago (September, 1925)	37.35
Ten years ago (September, 1916)	39.97
Thirteen years ago (September, 1913)	25.55

Late News Flashes

Valley Operations at High Rate

Youngstown, O., Sept. 7.—Eighty-five per cent mill operations will be maintained by the Youngstown district steel concerns for five days this week. Of the 53 independent open-hearth furnaces 45 are making steel with bessemer output at 75 per cent. Corporation steel plants are operating at practical capacity. Of the 127 independent sheet mills 117 are scheduled for five-day operation. Tin plate mills are at practical capacity as are hot strip mills. Independent bar mill operations are 75 per cent and those of the Corporation at 90 per cent. No. 1 stack of Youngstown Sheet & Tube Co. resumed blast Sept. 1 making 28 of the 42 blast furnaces in the district active.

Acquires Rights to New Pipe

New York, Sept. 7.—The United States Steel Corp. has obtained from British interests the American patents to a new process for lining steel pipe, which will compete with cast iron for water and gas mains and other underground work. While details of the process are unknown, it is understood it consists of a vitrified lining and casing for pipe. This can be put on either steel pipe or cast pipe manufactured by the centrifugal method. It is claimed pipe so made will last 100 years or longer. In England, where this pipe has been made for some time, it is said to be growing rapidly in popularity. The Steel Corporation finance committee has appropriated the necessary money to erect a plant. The Steel Corporation also has acquired the right to purchase a half interest in basic world patents on the new pipe.

Carnegie Plants Approximate War Rate

Pittsburgh, Sept. 7.—Between 80 and 85 per cent is the general average steelmaking operation in the valley and the Wheeling districts. The Homestead and Duquesne plants of Carnegie Steel Co. are operating on schedules that have not been surpassed since the peak of wartime demand. These plants are operating day and night on a 7-day schedule.

The American Sheet & Tin Plate Co. is operating its sheet mills at slightly above 91 per cent, but if the two idle mills were eliminated from consideration its percentage would be practically 100. An 85 per cent schedule seems assured until the end of the year. The general average sheet mill operation for the district is 85 per cent. Cold finishers are on an 80 per cent basis, nut and bolt manufacturers on a 75 per cent basis, and refractory makers on a 70 to 75 per cent basis.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS
4 x 4-inch base

Pittsburgh, open-hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Philadelphia	40.30
Chicago	35.00
Forging, Pittsburgh	40.00
Forging, Philadelphia	44.30 to 45.30

SHEET BARS

Pittsburgh	$36.00
Youngstown	36.00

SLABS

Pittsburgh	$35.00
Youngstown	35.00

WIRE RODS

Pittsburgh	44.00 to 45.00
Cleveland	45.00
Chicago	46.00

Standard extras, $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp	1.90c
Universal skelp, Pittsburgh	1.90c
Sheared skelp, Pittsburgh	1.90c

Structural Shapes

Pittsburgh	2.00c to 2.10c
Philadelphia	2.22c to 2.32c
New York	2.24c to 2.34c
Chicago	2.10c
Cleveland	2.19c
Birmingham	2.15c to 2.25c

Steel Plates

Pittsburgh	1.90c
Philadelphia	2.22c
New York	2.24c
Chicago	2.10c
Cleveland	2.09c
Birmingham	2.05c to 2.15c

Iron and Steel Bars

Pittsburgh, soft steel	2.00c to 2.10c
Pittsburgh, cold finishing	2.15c
Pittsburgh, forging quality	2.15c
Philadelphia, soft steel	2.22c to 2.32c
New York, soft steel	2.24c to 2.34c
Chicago, soft steel	2.10c
Cleveland, soft steel	2.19c
Birmingham, soft steel	2.15c to 2.25c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	2.00c to 2.10c
Youngstown, reinf. billet, base	1.90c to 2.00c
Chicago, rail steel	2.00c
Mill rail steel	1.85c to 1.95c
Philadelphia, common iron	2.22c to 2.32c
New York, common iron	2.24c to 2.34c
Chicago, common iron	2.00c

Hoops, Bands, Strips

Hoops, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh over 6 in.	2.30c
Hot rolled strip steel, Pittsburgh, stamping quality, over 6 in.	2.30c
Hot rolled strip steel, Chicago	2.50c to 2.60c
Bands, Chicago, under 6 inches	2.60c
Bands, Chicago, 6 in. and over	2.50c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.109-inch and heavier, base, Pittsburgh	3.50c to 3.60c
Worcester, Mass.	3.90c
Chicago	3.90c to 4.05c

Cold Finished Steel

Cold finished steel bars, drawn, or rolled Pittsburgh, Chicago carloads	2.50c
Less carload	2.75c
Steel shafting turned and polished Pittsburgh, Chicago	2.60c

Screw stock base Cleveland $1 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steel

Pittsburgh or Chicago

S. A. E. Series—	
2300 (3½ per cent nickel)	4.40c to 4.50c
3100 (Nickel chromium)	3.40c to 3.50c
6100 (Chrome vanadium)	4.25c to 4.30c
6100 (Chrome vanad. spring)	3.85c
9250 (Silico-mang. spring)	3.25c

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	43.00
Relaying rails, St. Louis	24.00 to 31.00
Relaying rails, Pittsburgh	23.00 to 25.00
Light rails, 25 to 45 mills	33.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c to 2.90c
Spikes, small railroad, 7-16-inch and smaller, Pitts.	2.90c to 3.00c
Spikes, boat and barge, Pitts.	3.10c
Spikes, railroad, Chicago	2.90c
Track bolts, Pitts. standard	3.90c to 4.25c
Track bolts, Chicago	3.90c
Tie plates, Chicago	2.35c
Tie plates, Pittsburgh	2.25c to 2.35c

Wire Products

To Jobbers in Carloads

Dealers 5 cents per 100 pounds extra
F.o.b. Cleveland and Pittsburgh base

Wire nails	2.65c
Galv'd nails smaller than 1-inch	4.90c
Galv'd nails, 1-inch and over	4.65c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
Polished staples	3.10c
Galvanized staples	3.35c

Coated nails, 100 pound kegs, subject to card of extras Feb. 1, 1926 over regular wire nail base.

Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts. $20.03

Joliet, DeKalb and Waukegan, Ill., and Anderson, Ind., prices $1 per ton over Cleveland-Pittsburgh base on products made there; Duluth $2 higher, Worcester, Mass., and Fairfield, Ala., $3 higher.

Sheets

SHEET MILL BLACK

No. 24, Pittsburgh, base	3.00c
No. 24, Philadelphia, delivered	3.32c
No. 24, Gary, Indiana Harbor	3.10c
No. 24, Chicago, delivered	3.15c

TIN MILL, BLACK

No. 28, Pittsburgh	3.15c
No. 28, Gary base	3.25c

GALVANIZED

No. 24, Pittsburgh, base	3.85c
No. 24, Philadelphia, delivered	4.17c
No. 24, Gary, Indiana Harbor	3.95c
No. 24, Chicago, delivered	4.00c

BLUE ANNEALED

No. 10, Pittsburgh, base	2.30c
No. 10, Philadelphia, delivered	2.62c to 2.72c
No. 10, Gary, Indiana Harbor	2.40c
No. 10, Chicago, delivered	2.45c

AUTOMOBILE SHEETS

No. 22, Pittsburgh, base	4.30c

Tin and Terne Plate

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.50

Gary, Ind., base 10 cents higher.

Long ternes, base	4.65

*This price is subject to quantity differentials established by individual regulations.

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—F.o.b. Pittsburgh Mills

Steel 2½ to 3¾-inch	68½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3¼ to 3½-inch	46 off

Additional discounts of seven 5 per cents being allowed for carloads and six 5 per cents for less-carload, on Japanned steel. On seamless hot rolled several additional 5 per cents are allowed.

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.80c
Cut nails, c. l., f.o.b. mills	2.80c

Cast Iron Water Pipe

Prices per net ton
Class B Pipe

Four-inch, Chicago	$51.20 to 52.20
Six-inch to 24-inch, Chicago	48.20 to 50.20
Over 24-inch, Chicago	45.20
Four-inch, Birmingham	44.00
Six-inch and over, Birmingh'm	40.00
Four-inch, New York	56.50 to 57.60
Six-inch and over, New York	51.50 to 52.60

Standard fittings, Birmingham base $110.00, 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B

Nuts and Bolts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Hot pressed square tapped or blank	$4.00 off list
Hot pressed hexagon tapped or blank	$4.40 off list
Cold punched square or hexagon blank	$4.10 off list
Cold punched square or hexagon tapped or blank	$4.10 off list

Cold punched U. S. S. semifinished hexagon nuts ⅝-inch and larger 75, 10 and 5 off

Cold punched U. S. S. semifinished hexagon nuts 9/16-inch and smaller 80, 10 and 5 off

Cold finished S. A. E. semifinished ⅝-inch and larger 75, 10, 10 and 5 off

Cold finished S. A. E. semifinished 9/16-inch and smaller 80, 10, 10 and 5 off

CARRIAGE BOLTS

(⅝ x 6-inch, smaller and shorter)

Rolled thread	50, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS

(⅝ x 4-inch, hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread (all sizes)	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45, 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 3 and 7 heads	50 and 10 off
All other standard heads	50 and 10 off plus 20 per cent
Tap bolts	30 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off

Rough stud bolts with nuts (250 pieces or more of a size) 40 and 10 off

Stove bolts, 80 and 10 off plus 2½ off in bulk to 80, 10 and 5 off plus 2½ off in bulk.

Tire bolts	60 and 5 off

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, f.o.b. producer's plant, freight allowed

	S.A.E. Castellated	U.S.S. Slotted
¼	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.30
¾	23.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89.00	89.00
1¼	126.00	131.00
1⅜	183.50	183.50
1½	210.00	210.00

Larger sizes—Prices on application

HEXAGON CAP SCREWS

Milled	80 and 10 off
Upset	80, 10 and 10 off

SQUARE HEAD SET SCREWS

Milled	80 and 5 off
Upset	80, 10 and 5 off

Rivets

Structural rivets, carloads, Pittsburgh and Cleveland	2.50c to 2.60c
Structural rivets, carloads, Chicago	2.60c to 2.75c

**Rivets, 7/16-inch and smaller, Pittsburgh Cleveland, 70, 10 and 5 to 70 and 10 off.

**Rivets, 7/16-inch and smaller Chicago 70, 10 and 5 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought c.l., Chicago dist.	$6.40 to 6.50 off
Wrought c.l., Pitts dist	6.50 to 6.55 off
Lock washers, f.o.b. factory	85 to 90 off

Pig Iron

Buying for Fourth Quarter Picking Up Slowly—Basic Offered at $18, Valley—Eastern Furnaces Are Well Booked

PIG iron inquiries and orders for fourth quarter are more general, although the volume is not yet impressive. The valley market shows some activity, after several weeks of dullness. The Westinghouse Electric & Mfg. Co. and the Pittsburgh Valve, Foundry & Construction Co. are among recent buyers, with 2000 tons each. Two furnaces are going ont, and with higher fuel prices, the market appears to be acquiring strength. A new low price on basic for the present movement was established, however, with a quotation of $17, valley, on 2000 tons. The buyer was able to obtain a better equivalent figure from a furnace having a more advantageous freight rate. Other makers quote $18. A wide price range also still applies on other grades.

PITTSBURGH, Sept. 7.—The pig iron market still is manifesting points of strength, with occasional outcropping of weakness. A nearby purchaser of 2000 tons of basic obtained a $17, valley, quotation from a valley merchant stack, but placed the order at a slightly more attractive figure due to a more favorable freight rate. Other makers are quoting $17.50 and one is naming $18. This development makes basic quotable at $17 to $18, valley. One or two makers of foundry iron still are willing to go to $17.50 for No. 2 foundry and malleable. Inquiries are appearing from time to time for 50 to 2000 tons. Business now pending here includes that of the Walworth Mfg. Co., National Transit, Pump & Machine Co., and a smaller foundry at Piqua, O. It is understood the Pittsburgh Valve, Foundry & Construction Co. placed 2000 tons on a reciprocity arrangement equivalent to $17.50, valley base, for No. 2 plain. The Westinghouse Electric & Mfg. Co. placed its Cleveland requirements at Cleveland. Several consumers in western Ohio and eastern Indiana want malleable iron. A few sales of foundry and malleable are noted at $18, valley. One producer is maintaining a quotation of $18.50. Similar conditions prevail in the market for bessemer. One merchant stack is selling to its regular customers at $19, valley. Two other sellers will accept $18. The Clinton stack is out for repairs and will probably stay out until the market has improved. The Struthers stack may bank or blow out Sept. 20, hence restricted output with higher fuel costs may give the needed strength to the pig iron market. One eastern maker of low phosphorus iron is out of blast, no excess tonnage is on hand and quotations are advancing. A local representative refused inquiries involving up to 500 tons at a time. A valley maker is selling small lots at $27.50, valley.

The average selling price of bessemer iron in August was $18.11, compared with $18.679 in July, and the average for basic in August was $17.417 against $17.50 in July, according to figures compiled by W. P. Snyder & Co.

Boston, Sept. 7.—Pig iron sales in New England continue to average about 5000 tons a week. Close observers estimate 35,000 tons still are required in the district for this year's melt. Prices are slightly firmer. The bulk of the recent tonnage was placed at the equivalent of $18.50, Buffalo, or $23.41 delivered. The past week's receipts of foreign iron at Boston totaled approximately 1000 tons. Some inquiry for first quarter is reported. Furnaces are reluctant to quote.

New York, Sept. 7.—Eastern furnaces are in the best position since the war. One furnace is scheduled full during September, over 90 per cent for October and over 80 per cent for November. This condition is rather typical of the situation as a whole excepting in the northeastern district where two furnaces still are in need of orders. Eastern Pennsylvania furnaces are firm at $21, base, furnace, and are refusing to equalizing freight rates in numerous cases. Buffalo foundry seems to be firm at $19, base furnace for shipment into this territory. In the northeastern district business continues to be done occasionally at considerably under $19 base furnace. The trade is interested in reports that the British coal strike is expected to be settled shortly; this would mean a resumption of English pig iron production, with the result that foreign competition here would be resumed. Current buying is small; the total of orders placed in this territory the past week probably did not exceed 5000 tons. Current inquiries aggregate about 1000 tons.

Philadelphia, Sept. 7.—Foundry pig iron bookings improved in the past week and the price situation is better. Eastern Pennsylvania makers more generally refuse to equalize freights so the current markets now is $21.76 to $22.39, delivered, Philadelphia, for the base grade.

Buffalo, Sept. 7.—Some improvement is noted in pig iron sales and inquiry, although new business remains below average proportions. Inquiry does not exceed 5000 tons. Some makers reduced stocks considerably in August. One Buffalo steelmaker that usually sells pig iron is reported out of the market. Another is using practically all the iron it produces. Buffalo sellers say the $20 base is being maintained on all district business but admit keen competition is forcing lower prices outside. Fourteen of 21 furnaces are in blast.

Cleveland, Sept. 7.—The flow of orders for pig iron continues at a steady rate, though small. Business booked by furnace interests with headquarters here during the week approximated 15,000 tons. The Westinghouse Electric & Mfg. Co. closed

(*Concluded on Page 677*)

Pig Iron Prices

Prices per gross ton

Bessemer, valley	$18.00 to 19.00
Bessemer, Pittsburgh	19.76 to 20.76
Basic, valley	17.00 to 18.00
Basic, Pittsburgh	18.76 to 19.76
Basic, Buffalo	19.00 to 19.50
Basic, del., eastern Pa.	20.75
Malleable, valley	17.50 to 18.50
Malleable, Pittsburgh	19.26 to 20.26
Malleable, del., Cleveland	19.50
Malleable, Chicago	21.00
Malleable, Buffalo	19.00 to 20.00
Malleable, del., eastern Pa.	22.25 to 22.75
No. IX, Eastern del., Phila.	22.76 to 23.39
No. IX, Buffalo	20.50 to 21.00
No. 1 foundry, Chicago	21.50
No. 2 foundry, valley	17.50 to 18.50
No. 2 foundry, Pittsburgh	19.26 to 20.26
No. 2 foundry, Buffalo	19.00 to 20.00
No. 2 foundry, Chicago	21.00
No. 2 foundry, Granite City	22.00 to 22.50
No. 2 foundry, Ironton furnace	20.00
No. 2 foundry, del., Cleveland	19.50
No. 2 foundry, del., Phila	21.76 to 22.39
No. 2 foundry, N. J., tidewater	22.39 to 22.76
No. 2X, eastern del., Phila.	22.26 to 22.89
No. 2X, east N. J., tidewater	22.89 to 23.26
No. 2X, foundry, Buffalo furnace	20.00 to 20.50
No. 2X, eastern del., Boston	23.65 to 24.15
No. 2X, Buffalo, del., Boston	23.41 to 23.91
Continental foundry f.o.b. Boston	19.50 to 20.50
India, 2.25 to 2.75 silicon, delivered cars, Boston	20.00 to 21.00
No. 2 Alabama, Birmingham	21.00
No. 2 Alabama, Cincinnati	24.69
No. 2 Tenn., Birmingham	21.00
No. 2 Tenn., Cincinnati	24.69
No. 2 Alabama, Philadelphia	27.01
No. 2 Alabama, Chicago	27.01
No. 2 Alabama, Chicago (barge and rail)	26.18
No. 2 Alabama, Boston (rail and water)	27.91
No. Alabama, Cleveland	27.01
No. 2 Alabama, St. Louis	25.42
No. 2X, Virginia, furnace	22.50 to 23.25
No. 2X, Virginia, Phila	27.67 to 28.42
No. 2X, Virginia, Jersey City	28.04 to 28.79
No. 2X, Virginia, Boston	28.42 to 29.17
Gray forge, eastern Pa.	20.75
Gray forge, val. del. Pitts.	18.76 to 19.26
Low phos., standard, valley	27.50
Low phos., standard, Phila.	24.26 to 24.76
Low phos., Lebanon, furnace	23.00 to 24.00
*Low phos., English (nominal)	24.01 to 24.51
Charcoal, Birmingham	29.00 to 30.00
Charcoal, Superior, Chicago	29.04

Silvery iron Jackson county, Ohio furnace, 5 per cent $24.50; 6 per cent $25.50; 7 per cent $26.50; 8 per cent $27.50; 9 per cent $29.00; 10 per cent $31.00; 11 per cent $33.00; 12 per cent $35.00; 13 per cent $37.00; and 14 per cent $39.00.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 per cent $33.00; 11 per cent $35.00; 12 per cent $37.00; 13 per cent $39.00; 14 per cent $41.00; 15 per cent $44.00; 16 per cent $46.00; 17 per cent $48.50.

*Duty paid, delivered Philadelphia consumers.

Coke

Market Firmer—Steel Companies Large Purchasers Recently—Seasonal Influences Felt

A FIRMER tone in the Connellsville beehive coke market results this week from the diminished output due to a protracted Labor day celebration. Steel companies have closed quietly for considerable tonnage in the last week or two. Some makers of foundry coke have advanced prices 25 cents. By-product coke reflects strengthening seasonal influences.

Pittsburgh, Sept. 7.—Beehive coke oven workers and coal miners commenced their labor day celebration last Friday night, extending it over until today, tomorrow or later. Output is restricted and market quotations are stiffening, especially for coke to be produced. Some makers are maintaining a minimum price of $3.50 for the furnace grade. With the Clinton stack going out of blast some excess coke is appearing, selling for $3.15 minimum. Brokers are obtaining slightly more on their turnover. About 30 cars are involved. Another Uniontown operator this morning sold a smaller quantity at that figure. One large operator claims a large proportion of 150 carloads sold brought $3.50. Other sales are noted at $3.25. Various steel companies lately active in the market include the Bethlehem Steel Corp., Jones & Laughlin Steel Corp. and the Republic Iron & Steel Co. The latter may purchase more tonnage. The Weirton Steel Co. is understood to be inquiring for October tonnage. The trade here believes the Canton, O., stack divided its order among several sellers for 20,000 tons monthly, paying as high as $3.50. Certain producers are disinclined to quote even that figure as far ahead as December, and they avoid committing themselves for first quarter. Medium sulphur coke inquiries are scarce, although the restricted supply brings the price on a par with the standard furnace grade. Foundry coke also is inclined to sell at higher levels. One or two makers are advancing the price 25 cents to $5 to consumers, which level is not yet liberally supported by sales. Other good coke is available at $4.25 to $4.50.

Production of coke in the Connellsville region for the week ended Aug. 28 was 130,310 tons, as compared with 126,860 tons the preceding week, according to the *Connellsville Courier*.

New York, Sept. 7.—Demand for furnace quality beehive coke continues active here and prices are tending higher, now ranging from $3.50 to $3.75, Connellsville. Demand for spot foundry coke is small, prices on the beehive material ranging from $4 to $5.25, Connellsville, depending on the brand, with the average around $4.25. However, consumption of foundry coke is big and heavy shipments are being made on contracts. On by-product foundry coke the market continues $9.59 to $10.77, delivered at Newark and other northern New Jersey consuming points, depending on the freight.

Cincinnati, Sept. 7.—By-product and beehive foundry coke is increasing in demand. Furnace fuel is quiet. Egg and walnut domestic grades are quoted at $5.50c and No. 2 nut $5, ovens, for shipment this month.

St. Louis, Sept. 7.—The unusually heavy melt for this time of year is reflected in continued excellent demand for foundry coke, particularly for prompt delivery. By-product manufacturers, who are operating close to normal capacity, report shipments of metallurgical coke about equal to output. There is a fair volume of inquiry from western and southwestern melters.

Birmingham, Ala., Sept. 7.—Contracts for coke call for considerable tonnage. Independent producers are confident there will be need for steady operation of by-product coke works through the remainder of the year. Quotations are firm, $5.50 being minimum for the foundry grade, with $6 for spot for quick delivery.

Coke Prices

Beehive, Ovens

Prices per net ton

Connellsville furnace	$3.15 to 3.50
Connellsville foundry	4.25 to 5.00
New River foundry	6.50 to 7.00
New River furnace	4.50 to 5.00
Wise county furnace	4.00
Wise county foundry	4.50 to 5.00
Alabama foundry	5.50

By-Product

Foundry, Newark, N. J.; del.	$9.59 to 10.77
Foundry, Chicago, ovens	9.75
Foundry, New England, del.	12.00
Foundry, St. Louis	10.00
Foundry, Granite City, Ill.	10.00
Foundry, Birmingham	5.50 to 6.00
Foundry, Indianapolis, del.	10.25
Foundry, Ashland, Ky.	7.50
Foundry, Portsmouth, O.	7.50

Ferroalloys

Market Is Quiet—Prices Steady—Shipments Heavy

Pittsburgh, Sept. 7.—Last week was devoid of activity in ferroalloys, even specifications against contracts lagging. During the past two or three months, only a few single carload inquiries for ferromanganese have appeared and have been quietly closed up at current market levels. In this product, domestic makers blanketed their trade for the remainder of the year with "requirement" contracts. No real buying is expected until consumers are ready to make new arrangements for the first quarter or first half of 1927, and producers are yot yet ready to solicit. Prices are unchanged.

The spiegeleisen situation remains tight because of restricted production. Wherever possible, 16 to 19 per cent material is being accepted in lieu of the higher grade on mutually satisfactory arrangements. The quoted market level on the low grade is $33, with $34 the nominal figure on 19 to 21 per cent.

New York, Sept. 7.—Special ferroalloys are in a steady market, with little business outside of fulfilling contracts. With steel mills running at high rates, shipments naturally are active. Prices are firm.

Plan Concrete Meeting

The semiannual meeting of the Concrete Reinforcing Steel institute will be held Sept. 13-15 at French Lick Springs Hotel, French Lick, Ind. Several papers have been prepared, including an illustrated review of "Conditions of the Pacific Coast," by Edward L. Soule, president, Edward L. Soule Co., San Francisco. "The Development of Concrete Reinforcement" is the subject of a second illustrated address, by A. E. Lindau, president, American System of Reinforcing, Chicago. W. F. Zabriskie, vice president, Gabriel Steel Co., Detroit, will present the report of the committee on engineering practice, covering "Standard Building Code Recommendations for Reinforced Concrete." A feature at the semiannual dinner on Tuesday, Sept. 14, will be an address on "Shakespeare, the Salesman," by William B. Burruss, New York.

The Whitwell hot blast stove first was applied in this country to the Rising Fawn stack, in Dade county, Ga., in 1875.

Ferroalloy Prices

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resales	$88.00 to 100.00
Ferromanganese delivered Pittsburgh	92.74 to 104.79
Spiegeleisen 19 to 21 per cent domestic furnace or tidewater	32.00 to 34.00
Ferrosilicon, 50 per cent freight allowed	85.00 to 87.50
Ferrotungsten standard, per pound contained	1.00 to 1.05
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	11.00 to 11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	3.25 to 4.00
Ferro-carbon-titanium, car lots, producer's plant, net ton	200.00
Ferrophosphorus, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent material)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23 to 25 per cent, f.o.b. Anniston, Ala., (24 per cent materials)	122.50

†Duty paid.

Plates

Market Continues Firm—Buyers Delay Placing Fourth Quarter Needs

BUSINESS in the plate market continues of a routine character, mills receiving a fairly satisfactory volume of moderate size orders. Some consumers have shown an interest in fourth quarter requirements, but the firmness of the market has tended toward further piecemeal buying. At Chicago, 5000 tons of plates are involved in current tank inquiries.

PLATE PRICES, PAGE 662

Pittsburgh, Sept. 7.—Plate mills are active on miscellaneous demands. Fabricating shops supplying river craft are well filled up for the remainder of the open season and are more concerned about making deliveries than they are about taking new jobs. The current market level on tank plates is 1.90c and that probably will be the basis for fourth quarter contracts, although large producers are not ready to announce levels for that period.

Boston, Sept. 7.—The Boston & Maine railroad is in the market for 200 tons of plates for bridge work. Other inquiries are for lots under 100 tons. The Boston & Albany railroad has purchased locomotives which call for 600 tons of plates. The price is firm at 1.90c, Pittsburgh, or 2.265c delivered.

New York, Sept. 7.—Pipe lines have been engaging the attention of the plate trade here. Present indications are that the big Wanaque pipe line, involving about 20,000 tons of plates, will come up for bids around December. This line will be a part of the northern water supply district in New Jersey, which includes the supply for the cities of Newark, Jersey City and other important communities. The city of Kearny, N. J., is about ready to take bids on a pipe line involving about 1000 tons of plates. The plate market continues exceedingly firm at 1.90c, base Pittsburgh, and this price is being paid right along by important consumers, including some which have been able in recent years almost without exception to shade the market by several dollars per ton.

Cleveland, Sept. 7.—Most sellers of plates look for September to develop its normal gain over July and August; they refuse to believe that the exceptional business of the last 60 days has been anticipatory to any extent. With one maker, August was a considerably better month than July. Some Great Lakes ship repair work promises to develop shortly. Consumption in this district has been accounting for substantially all shipments and consumers have light inventories. Some interest in the fourth quarter developed among certain large consumers but when the current quotation of 1.90c, Pittsburgh, or 2.09c, delivered Cleveland, was asked this interest waned.

Chicago, Sept. 7.—Tank inquiry is for more than 5000 tons, but tank business in the past week was light. New buying is slightly under shipments, and August business was a fraction under that of July. Consumers generally are ordering several weeks ahead and mills are able to make prompt deliveries. Some fourth quarter inquiry has come out in the past week. A western railroad is expected to place 3000 tons of plates, shapes and bars shortly.

Philadelphia, Sept. 7.—Despite the holiday Monday plate bookings for the mills are resuming after the labor day shutdown, with good schedules. The price is firm at 1.90c, Pittsburgh.

CONTRACTS PLACED

1700 tons, 14 barges for the Mississippi River commission, Memphis, Tenn.; formal award recently made to the Dravo Contracting Co.

750 tons, nine derrick boat hulls for the United States engineers, St. Louis, to the Dravo Contracting Co., Neville island, Pittsburgh.

400 tons, for 1,300,000-gallon pipe for East Side, Youngstown, O., to the Petroleum Iron Works, Sharon, Pa.

300 tons, one 80,000 barrel tank for Shell Oil Co., berth 167, San Pedro, Calif., to Lacy Mfg. Co.

300 tons, one 80,000-barrel tank for Shell Oil Co., San Pedro, Calif., to Llewellyn Iron Works.

150 tons, standpipe at Tacoma, Wash., to Gerrick & Gerrick.

CONTRACTS PENDING

Unstated tonnage, several barges, one steamboat and one derrick boat for the Allegheny River Sand & Gravel Co., West Hickory, Pa.; bids about to be asked for spring delivery.

Semifinished

Books Opened for Fourth Quarter by Some Mills, at Present Prices

PRINCIPAL activity in semifinished steel continues in specifications, which are being received by the mills at a satisfactory rate. Some makers have opened their books for fourth quarter at present prices and a few contracts have been closed. A number of important consumers will buy on a month-to-month basis. Wire rod specifications have improved.

SEMIFINISHED STEEL PRICES, PAGE 662

Pittsburgh, Sept. 7.—In semifinished steel the continued feature is the expanding tonnage in sheet and tin bar specifications. These are active along with the sustained market in tin plate and improved market in sheets. Users as well as producers are not ready as yet to commence on fourth quarter business. A number of conversion mills will continue their policy of buying on a month-to-month basis. One or two billet inquiries are out and a few tentative requests for future prices on sheet bars have been received. Quotations, however, are the same as they have been, namely $35 on billets, $40 on forging billets, and $36 on sheet bars. Wire rod specifications show a tendency to increase, and the price is unchanged at $45. Not much is doing in skelp and while some effort is made occasionally to obtain 2.00c, particularly on future shipments, 1.90c is the quotable market.

Youngstown, O., Sept. 7.—The situation with respect to semifinished steel has not changed in the past week. The intimation given a week ago by makers of billets and sheets bars that they likely will not change present quotations of $35 and $36, respectively, for fourth quarter delivery seems to have met with satisfactory response. Shipments on contract appear normal and no large new sales of any grade have been reported.

Cleveland, Sept. 7.—The leading merchant producer of sheet bars, billets and slabs here has opened its books for fourth quarter at the same prices that applied on most of its third quarter business, namely, $36, Cleveland or Youngstown, for sheets bars, and $35, for billets and slabs. Some business is reported booked at these levels. Full operations are noted, specifications continuing good.

Philadelphia, Sept. 7.—Sales of billets are small, and prices are unchanged at $35, Pittsburgh, for rerollers, and $40 for forging quality. Wire rod demand is good. The price is $45, Pittsburgh, on small lots, but this figure is shaded on attractive orders.

The rail mill of the Algoma Steel Corp., Sault Ste. Marie, Ont., resumed operations, Sept. 1, on a single turn basis on a Canadian Pacific railroad rail order. The 18-inch merchant mill of the Algoma corporation is on a double turn basis and the 12-inch mill on a single.

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	13.00 to 14.00
Boston (dealers)	11.50 to 12.50
Buffalo, No. 1	18.00 to 18.50
Buffalo, No. 2	16.75 to 17.25
Chicago	14.25 to 14.75
Cincinnati (dealers)	14.00 to 14.50
Cleveland, No. 1	15.00 to 15.50
Cleveland, No. 2	14.00 to 14.50
Detroit	12.75 to 13.25
Eastern Pennsylvania	17.00 to 17.50
Bethlehem delivery	15.50 to 16.00
New York (dealers) (yard)	11.00 to 12.00
Pittsburgh	17.75 to 18.25
St. Louis	13.75 to 14.25
Valleys, No. 1	18.00

COMPRESSED SHEETS

Buffalo	16.75 to 17.25
Chicago	12.50 to 13.00
Cleveland	14.00 to 14.50
Detroit	11.00 to 11.50
Pittsburgh	16.50 to 17.00
Valleys	17.50

BUNDLED SHEETS

Buffalo	12.00 to 12.50
Cincinnati (dealers)	10.00 to 10.50
Cleveland	12.50 to 13.00
Eastern Pennsylvania	14.00
Pittsburgh	15.50 to 16.00
St. Louis	9.00 to 9.50

SHEET CLIPPINGS, LOOSE

Chicago	8.25 to 8.75
Cincinnati	7.50 to 8.00
Detroit	6.75 to 7.25
St. Louis	9.00 to 9.50

STEEL RAILS, SHORT

Birmingham	13.00 to 14.00
Buffalo	17.25 to 17.75
Chicago	17.25 to 17.50
Cincinnati (dealers)	18.50 to 19.00
Cleveland (over 6 ft.)	15.50 to 16.00
Detroit	15.50 to 16.00
St. Louis	16.75 to 17.25

STOVE PLATE

Birmingham	14.00 to 14.50
Boston (consumers)	14.00 to 14.50
Buffalo	15.25 to 15.75
Chicago (net)	14.25 to 14.75
Cincinnati (dealers) (net)	10.00 to 10.50
Cleveland	13.00 to 13.50
Detroit (net tons)	12.50 to 13.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.00 to 12.00
Pittsburgh	14.50 to 15.00
St. Louis	15.00 to 15.50

LOW PHOSPHORUS

Buffalo, billet and bloom crops	18.50 to 19.00
Cincinnati (dealers)	17.00 to 17.50
Eastern Pennsylvania	21.00 to 22.00
Pitts. billet and bloom crops	22.00 to 22.50
Cleveland, billet and bloom crops	19.00 to 19.50

SHOVELING STEEL

Chicago	14.00 to 14.50
Pittsburgh	13.00 to 13.50
St. Louis	13.75 to 14.25

KNUCKLES, COUPLERS, SPRINGS

Chicago	17.50 to 18.00
Eastern Pennsylvania	18.50 to 19.00
Pittsburgh	19.50 to 20.00
St. Louis	15.00 to 15.50

FROGS, SWITCHES, GUARDS

Chicago	15.75 to 16.25
Eastern Pennsylvania	12.00 to 12.50
St. Louis	15.25 to 15.75

ANGLE BARS—STEEL

Buffalo	16.50 to 17.00
Chicago	16.25 to 16.75
St. Louis	15.00 to 15.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	$12.00 to 13.00
Boston (dealers)	11.50 to 12.00
Buffalo, No. 1	13.50 to 14.00
Buffalo, No. 2	15.50 to 16.00
Chicago, No. 1	14.75 to 15.25
Chicago, No. 2	14.25 to 14.75
Cincinnati, No. 1 (dealers)	12.00 to 12.50
Cleveland, No. 1	12.50 to 13.00
Eastern Pennsylvania	17.50 to 18.50
New York, No. 1 (dealers)	14.50 to 15.00
Pittsburgh, No. 1	14.50 to 15.00
Pittsburgh, No. 2	17.75 to 18.25
St. Louis, No. 1	13.50 to 14.00
St. Louis, No. 2	13.75 to 14.25

WROUGHT PIPE

Boston (dealers)	11.00 to 11.50
Eastern Pennsylvania	16.00 to 16.50
Buffalo	15.00 to 15.50
New York (dealers)	12.00 to 12.25

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	16.50 to 17.00

BUSHELING

Buffalo	16.75 to 17.25
Chicago, No. 1	12.50 to 13.00
Chicago, No. 2	9.00 to 9.50
Cincinnati, No. 1 (dealers)	8.50 to 9.00
Cleveland, No. 1	11.75 to 12.25
Cleveland, No. 2	11.75 to 12.00
Pittsburgh, No. 1	15.50 to 16.00
St. Louis No. 1	12.25 to 12.75

MACHINE SHOP TURNINGS

Birmingham	8.00 to 8.50
Boston	9.00 to 9.50
Buffalo	10.75 to 11.25
Chicago	7.75 to 8.00
Cincinnati (dealers)	7.00 to 7.50
Cleveland	11.00 to 11.50
Detroit	8.75 to 9.25
Eastern Pennsylvania	14.00
New York (dealers)	9.75 to 10.25
Pittsburgh	13.50 to 14.00
St. Louis	8.00 to 8.50

CAST IRON BORINGS

Birmingham (chemical)	15.50 to 16.50
Birmingham (plain)	8.00 to 8.50
Boston (chemical)	10.50 to 11.00
Boston (dealers)	8.50 to 9.50
Buffalo	12.00 to 12.50
Chicago	11.50 to 12.00
Cincinnati (dealers)	7.50 to 8.00
Cleveland	11.75 to 12.25
Detroit	9.50 to 10.00
Eastern Pennsylvania	14.00 to 14.50
Eastern Pennsylvania (chem.)	16.00 to 17.00
New York (dealers)	9.75 to 10.75
Pittsburgh	13.00 to 13.50
St. Louis	11.25 to 11.75
Valleys	13.50

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	8.75 to 9.00
Buffalo	12.00 to 12.50
Cincinnati (dealers)	7.00 to 7.50
Cleveland	11.75 to 12.25
Detroit	9.00 to 9.50
Eastern Pennsylvania	13.00 to 14.00
New York (dealers)	9.75 to 10.25
Pittsburgh	13.00 to 13.50

PIPES AND FLUES

Chicago (net)	9.75 to 10.25
Cincinnati (dealers)	9.00 to 9.50
St. Louis	11.00 to 11.50

RAILROAD GRATE BARS

Buffalo	14.00 to 14.50
Chicago (net)	14.00 to 14.50
Cleveland	13.50 to 13.75
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.25 to 12.00
St. Louis	15.00 to 15.50

FORGE FLASHINGS

Boston (dealers)	10.00 to 10.50
Buffalo	14.00 to 14.50
Chicago	9.25 to 9.75
Cleveland (under 10 in.)	12.50 to 13.00
Cleveland (over 10 in.)	12.50 to 13.00
Detroit	8.75 to 9.25
Pittsburgh	14.50 to 15.00

FORGE SCRAP

Boston (dealers)	9.75 to 10.25
Chicago	18.50 to 19.00
Eastern Pennsylvania	14.50 to 15.00

ARCH BARS AND TRANSOMS

Chicago (net)	20.00 to 20.50
St. Louis	21.00 to 21.50

Iron Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	9.50 to 10.00
Buffalo	13.50 to 14.00
Chicago	12.50 to 13.00
Cleveland	12.50 to 13.00
Eastern Pennsylvania	15.00 to 16.00
Pittsburgh	16.00 to 16.50
St. Louis	11.00 to 11.50

STEEL CAR AXLES

Birmingham	17.00 to 18.00
Boston (shipping point)	18.00 to 18.50
Buffalo	16.50 to 17.00
Chicago	20.75 to 21.25
Cleveland	16.00 to 16.50
Eastern Pennsylvania	23.00 to 24.00
Pittsburgh	23.00 to 23.50
St. Louis	20.50 to 21.00

SHAFTING

Boston (shipping point)	16.00 to 17.00
Chicago	20.25 to 20.75
Eastern Pennsylvania	22.00 to 23.00
New York (dealers)	17.50 to 18.00
St. Louis	18.00 to 18.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	$16.00 to 16.50
Boston (consumers)	17.00 to 17.50
Buffalo, iron	16.50 to 17.00
Buffalo, steel	17.00 to 17.50
Chicago, iron	16.50 to 17.00
Chicago, steel	18.00 to 18.50
Cincinnati	13.00 to 13.50
Eastern Pennsylvania	17.50 to 18.00
New York iron (dealers)	12.50 to 13.50
Pittsburgh, iron	16.50 to 17.00
Pittsburgh, steel	19.50 to 20.00
St. Louis, iron	15.25 to 15.75
St. Louis, steel	17.50 to 18.00

NO. 1 CAST SCRAP

Birmingham, cupola	16.50 to 17.00
Boston	18.00 to 18.50
Buffalo	16.25 to 16.75
Chicago, No. 1 machinery	19.00 to 19.50
Chicago No. 1 railroad or agricultural	18.25 to 19.00
Cincinnati No. 1 Machinery cupola (net tons dealers)	18.50 to 19.00
Cleveland, cupola	16.75 to 17.25
Detroit (net tons)	15.00 to 15.50
Eastern Pennsylvania, cupola	18.00 to 18.50
New York, cupola (dealers)	14.50 to 15.00
Pittsburgh, cupola	17.00 to 17.50
San Francisco, delivered	20.00 to 21.00
Seattle	16.50
St. Louis, railroad	16.50 to 17.00
St. Louis, agricultural	16.50 to 17.00
St. Louis, machinery	19.00 to 19.50
Valleys	17.50

HEAVY CAST

Boston	15.50 to 16.50
Buffalo (breakable)	14.00 to 14.50
Cleveland	13.00 to 13.25
Detroit (Automobile) (net tons)	20.00 to 20.50
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	12.75 to 14.00
Pittsburgh	16.00 to 16.50

MALLEABLE

Boston, railroad	19.50 to 20.50
Buffalo	17.50 to 18.00
Chicago, agricultural	15.25 to 15.75
Chicago, railroad	17.50 to 18.00
Cincinnati, railroad (dealers)	15.50 to 16.00
Cincinnati, agricultural (dealers)	14.50 to 15.00
Cleveland, agricultural	17.50 to 18.00
Cleveland, railroad	18.50 to 19.00
Detroit	14.50 to 15.00
Eastern Pennsylvania, railroad	17.00 to 18.00
Pittsburgh, railroad	18.50 to 19.00
St. Louis, agricultural	15.00 to 15.50
St. Louis, railroad	15.00 to 15.50

Miscellaneous Scrap

RAILS FOR ROLLING
3 feet and over

Birmingham	15.50 to 16.50
Boston (dealers)	12.50 to 12.75
Buffalo	17.25 to 17.75
Chicago	17.50 to 18.00
Cleveland	16.00 to 16.25
Eastern Pennsylvania	17.50 to 18.00
New York	13.75 to 14.25
Pittsburgh district	18.50 to 20.00
St. Louis	16.75 to 17.25

LOCOMOTIVE TIRES

Chicago, No. 1	18.25 to 18.50
Chicago, cut	18.50 to 19.00
St. Louis, No. 1	16.00 to 16.50

LOW PHOSPHORUS PUNCHINGS

Chicago	16.50 to 17.00
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh	19.00 to 19.50

Scrap

Market Pauses After Recent Advance—Some Recession as Consumers Delay Buying

LACK of buying by consumers, the holiday interval and a natural reaction after somewhat heavy buying have united to cause a somewhat quiet situation. Offers for small tonnages are at lower figures than recent sales and find no takers. Dealers are acting on the belief that consumption will continue heavy and are holding for better prices.

Chicago, Sept. 7.—Heavy melting steel, because of some recent fairly heavy purchases of highly selected shipments, has been given a shade of strength, and is quoted $14.25 to $14.75, an advance of 25 cents over the level of the past month. While some other grades of iron and steel scrap have been marked up in sympathy with the bolstering of melting steel, consumer buying remains extremely light, as has been the case for several weeks. In the absence of consumer takings, no additional strength has been given the market despite this price adjusting. Rerolling and miscellaneous rails are up 25 to 50 cents on some sales. Iron angle bars are quoted 50 cents higher and railroad grate bars are up 25 cents.

Boston, Sept. 7.—A further advance to $13, shipping point, for heavy melting steel is reported by leading dealers. Inquiry from Pennsylvania steel works is more active. The supply of chemical borings is reported inadequate to fill the demand from New Jersey consumers. Cast grades are still sluggish with textile scrap selling at $18 to $18.50 delivered.

New York, Sept. 7.—Scrap over the past week has been steady, with the tone slightly easier. Principal activity is still in melting steel, although there are no particularly heavy orders. Demand for borings and turnings and skeleton steel has dropped off materially; little activity also is noted in cast grades and wrought scrap.

Buffalo, Sept. 7.—Scrap consumers are feeling out the market with offers 25 to 50 cents under prices at which last tonnage deals were made. Dealers say users of No. 1 heavy melting steel offer $18 to $18.25 for suitable material and that those using the ordinary grade will pay $17.

Pittsburgh, Sept. 7.—Opinion is divided, some scrap sellers anticipating weakness here because that tendency already has developed in the west, while others look for an increasingly strong market because consumption is expected to be maintained at a high level, due to the sustained 85 per cent schedule in steelmaking. Considerable scrap is quietly changing hands and while it is true that sales among dealers are numerous, purchases occasionally are made by consumers. Following the recent purchase by an Ohio user of heavy melting steel at $18.25, some consumers in this locality have bought smaller quantities at $17.75.

Cleveland, Sept. 7.—Iron and steel scrap buying in this district is confined to dealer transactions, considerable tonnage being picked up to apply on contracts. Consumers have fairly large stocks and are displaying little interest in offerings. Prices

St. Louis, Sept. 6.—Iron and steel scrap shows a somewhat firmer tone. This condition is due solely to speculative activity by dealers, as consumers are still holding aloof. The middlemen have been bidding in lively fashion on good railroad scrap for their yards, and are looking for a general upturn in the market somewhere about the middle of this month.

Cincinnati, Sept. 7.—With consumers of scrap entering more business on their books, the movement of materials is steadily increasing. The market is stronger, although prices have not been altered from a week ago.

Detroit, Sept. 7.—Decreased demand for iron and steel scrap features the market. The recent improvement appears to have been due to dealer activity and the natural reaction has followed. Production continues heavy. As a result of the weakening of demand prices are off 50 to 75 cents a ton.

Philadelphia, Sept. 7.—Important consumers generally having bought scrap for some time ahead the leading activity is buying by brokers to fill these contracts. Brokers are paying lower prices on some grades.

Birmingham, Ala., Sept. 7.—No improvement is noted in iron and steel scrap and indications point to the larger melters taking their time in buying. Heavy melting steel is quoted at $13 per ton and larger melters, though operating open-hearth furnaces steadily are not buying.

Sheets

New Base and Differentials Now General—Market Strong and Moderately Active

PRACTICALLY all leading sheetmakers have adopted the new base and differentials for black and galvanized material. Coincident with the change at St. Louis, a slight increase was made in the price of black, and also blue annealed. Sales of the heavier gages are more numerous. There is some talk of changing the base for full finished. The market is strong.

SHEET PRICES, PAGE 662

Pittsburgh, Sept. 7.—Adoption of new gage differentials on black and galvanized sheets is practically complete. Only a few smaller makers remain to follow the lead. With this week's issue IRON TRADE REVIEW adopts the 3.00c base quotation on No. 24 gage black. Tin mill black not being effected by the change remains quotable at 3.15c for No. 28 gage. The new base quotation of 3.85c on No. 24 gage galvanized also is adopted. The blue annealed base still is No. 10 and is quoted at 2.30c. While it may be changed soon to No. 20, the base on full finished for the present still is No. 22, and the price is 4.30c. Sales of heavy gage sheets at the new levels are in some cases more numerous than the lighter gages because by the change the former are reduced and the latter increased.

August stands out in the leading sheetmakers' records as the best month for bookings, except at the peak of wartime demand. Shipments to practically every consuming line were high. The general average operation of sheet mills is 80 to 85 per cent, with the American Sheet & Tin Plate Co. on an 84 per cent level.

Boston, Sept. 7.—Black sheets are in good demand with the price firm at 3.15c, Pittsburgh, for No. 28 gage. Galvanized sheets are less active but producers are attempting to advance the price to 4.40c, Pittsburgh, for No. 28 gage.

New York, Sept. 7.—A large tonnage of blue annealed sheets are involved in the construction of a concrete pipe line at Providence, R. I., to be built by the Lock Joint Pipe Co., Ampere, N. J.

Buffalo, Sept. 7.—Sheet business has been disturbed by the adoption of new base and extras, but makers look for a good volume of orders to be entered before the end of the month. Inquiry for fourth quarter tonnage is better. For the present district sellers are quoting the old price of 3.15c base Pittsburgh, for black. Mill operation is estimated at 80 per cent of capacity.

Youngstown, Sept. 7.—Adherence of additional independent sheet mills to the new base and differentials ap-

parently has made certain the final acceptance of the new program eventually. Orders for light and heavy gage sheets are coming in today in the usual volume and mill bookings are regarded as satisfactory. Some mills in the district are booked for five to six weeks, others from three to four and still others from 10 days to two weeks.

The Sharon Steel Hoop Co. has announced its acceptance of the new schedules and bases. Information that the American Rolling Mill Co., Middletown, O., and the National Enameling & Stamping Co., East St. Louis, also has accepted them was received in the valley today with considerable satisfaction. The feeling among sheetmakers in this district appears to be that a revision of some of the extra lists on the heavier gages may be found advisable at some time in the future. Mills are operating about as they did last week. Quotations have not changed from black No. 24 gage 3.00c, galvanized No. 24 gage 3.85c, autobody No. 22 gage 4.30c and blue annealed No. 10 gage 2.30c, Pittsburgh base.

Cleveland, Sept. 7.—Sheet buying slackened during the latter part of last week reflecting holiday influence. A large proportion of current bookings is for immediate shipment. While the recently announced price schedule applying on black and galvanized No. 24 gage has been placed in effect by the majority of producers represented in this district, little tonnage for fourth quarter priced on this basis has been sold other than to preferred customers. Normal buying continues in the high-grade market, no large tonnages being under negotiation. Quotations on black sheets No. 28 gage are firm at 3.15c and on galvanized stock at 4.25c to 4.30c. Blue annealed sheets are quoted at 2.30c and high-grade sheets at 4.30c. Mills generally are scheduled from two to four weeks.

Chicago, Sept. 7.—Spot buying of sheets for early delivery continues heavy, but mills are unable to give assurance of delivery inside of four weeks. On the whole deliveries on back and galvanized have been extended six weeks, and are further off on blue annealed. Most orders are specified for more speedy delivery than is possible. The leading independent is operating at capacity. The Inland Steel Co. has announced a base price on No. 24 gage black sheets at 3.10c, Indiana Harbor, and 3.15c, Chicago, and a base price on No. 24 galvanized sheets at 3.95c, Indiana Harbor and 4.00c, Chicago. This does not change its present price on No. 24 gage, but results in a lower price for heavier gages and a higher price for the lighter gages. Prior contracts stand, the new base to apply when fourth quarter books open.

St. Louis, Sept. 7.—The Granite City Steel Works, steel division of the National Enameling & Stamping Co. has announced that effective Sept. 1 will quote one-pass cold rolled black and galvanized sheets, using No. 24 gage instead of 28 gage for its base price. The same differentials as those used by the Youngstown Sheet & Tube Co. will be employed. Price announced by the Granite City Steel Works for No. 24 galvanzied, is 3.95c, and for black 3.10c. The company's quotations are on a Gary base.

Philadelphia, Sept. 7.—Practically all sheet mills have adopted the new base and extras for black and galvanized. Several have issued printed lists. Consumers say all makers have followed the lead of the Youngstown Sheet & Tube Co. There are indications that the change will extend to full finished, making No. 20 gage the base instead of No. 22 gage. Demand continues heavy, enabling most mills to operate full, with good backlogs.

Tin Plate

New Records Being Attained in Consumption

TIN PLATE PRICES, PAGE 662

Pittsburgh, Sept. 7.—Every indication points to the conclusion that 1926 will make further history in tin plate production and consumption. It seems that all the tin plate made or about to be made into cans will be utilized for this year's packs. Some fairly large orders have been distributed among four or five independent makers by a large can company because it was unable to obtain the desired deliveries from its usual source.

The American Sheet & Tin Plate Co. operated at a trifle higher than 91 per cent of capacity during the week. Taking into consideration the fact that two of its mills are entirely idle, it means that this company's tin mills are running practically full. The quoted market price is unchanged at $5.50.

Boston & Albany railroad has contracted for 25 new locomotives at a cost of $2,150,000. Twenty of these locomotives are freight type, each 87 feet long and 290 tons in weight. Each will have eight driving wheels and four trailers, and will be equipped with mechanical stokers and all other modern auxiliaries.

Pipe

Deliveries Rather Than Price Worry Buyers of Line Pipe—Cast Pipe Market Is Slow

PLACEMENT of numerous 6 and 8-inch oil lines in Kansas follow booking of a 32,000-ton South American order by leading pipemaker. Prices of seamless tubing still are being shaded, although mills have good backlogs. Cast iron pipe sellers expect heavy contractors' lettings at Chicago shortly. New York cast pipe market is dull, with 11,000 tons for New York still pending.

PIPE PRICES, PAGE 662 AND 694

Pittsburgh, Sept. 7.—The question of delivery transcends the questions of price on lapwelded pipe. On some sizes, deliveries are eight to ten weeks deferred, notwithstanding the fact that lapweld mills are on a 100 per cent operating basis. Buttweld pipe backlogs are not so heavy and operations are lighter. A sustained demand, however, is enjoyed from jobbers for standard full weight merchant pipe. The National Tube Co. received another order from the National Andean Corp., involving 32,000 tons of 10-inch pipe for a 300-mile line in Colombia, South America. The Sinclair Pipe Line Co., owned jointly by Sinclair Consolidated Oil Corp. and Standard Oil Co. of Indiana, is buying 98 miles of 8-inch (7500 tons) and 93 miles of 6-inch (4750 tons) for a 30-mile 8-inch loop line from Humboldt, Kans.; a 6-mile 8-inch loop line from Neal, Kans. westward; a 62-mile 8-inch line from Eldorado, Kans., to Rice county pool near Wherry and thence 93 miles of 6-inch to Russell county pool near Fairport, Kans. The T. W. Phillips Gas & Oil Co., Butler, Pa., is in the market for a short 8-inch pipe line.

Seamless tube mills have good backlogs for September, but competition remains keen, as many as six or seven discounts of 5 per cent each beyond the card being granted on attractive business.

Chicago, Sept. 7.—Most new cast iron pipe business consists of contractor's lettings. A number of smaller municipalities, including suburban Chicago and Detroit, and at other points in Illinois and Michigan, will place public business shortly. The expected autumn recession has not yet fully materialized, although shipments practically balance bookings. Pipemakers are booked forward about 60 days. Most of the business is going at $41, Birmingham, or $49.20, Chicago, on pipe 6-inch and over, but $42, Birmingham, is being obtained on smaller tonnages. Heavy competition recently has brought out $40, Birmingham.

Birmingham, Ala., Sept. 7.—Lettings are infrequent, the trade being quiet, according to cast iron pipe makers. Nevertheless, operations are being speeded up where possible and pipe is being shipped as raipidly as it can be manufactured. Resistance is being made to an attack on Birmingham rates to the eastern half of the United States as filed before inter-

state commerce commission by the Warren Foundry & Pipe Co., Alabama producers fearing injury to their trade in Ohio, Indiana and Illinois. Quotations on cast iron pressure pipe are $40.00, base, 6-inch and over.

CONTRACTS PLACED

302 tons of 8-inch class C and 154 tons of 8-inch class B, by Seattle to B. Nicoll & Co.

CONTRACTS PENDING

418 tons of 4 to 8-inch class B, by San Bernardino, Calif.; bids in.
368 tons of 2 to 6-inch Class B, by Phoenix, Ariz.; bids in.
150 tons, 12-inch class B pipe; bids in Sept. 7.
130 tons, 4-inch class B pipe, for Grayville, Ill.; bids in Sept. 6.

Iron Ore

August Lake Shipments Set New Record With 10,709,942 Tons

Cleveland, Sept. 7.—More complete figures on the Lake Superior iron ore movement for August shows the total amount brought down in vessels was 10,709,942 tons. This was 50,739 tons more than in prior monthly record of 10,659,203 tons established in July 1918. It was 2,177,224 tons more than the lake shipment in August, 1925, and 710,805 tons more than the movement in July.

Some ore producers find the market a little more active than it was in August. Small-order business that has been hanging fire remains to be closed before the winter season, and the total involved is around 100,000 tons, including two inquiries for 35,000 to 40,000 tons each.

Builds Large Generators

Two electric generators, each nominally rated at 90,000 kilowatts at 90 per cent power factor and said to be the largest in both capacity and physical dimensions are being manufactured by the General Electric Co., Schenectady, N. Y., for the Southern California Edison Co. These units will be driven by the two largest single turbines ever made.

Two unusual features have been incorporated in these machines. The armatures are being built especially heavy so as to be gas-tight, for the possible adoption of the new system of hydrogen cooling. Each weighing 330,000 pounds, they are of such size that they must be assembled at Los Angeles. The heaviest pieces to be shipped from Schenectady will weigh 230,000 pounds; these will be the revolving fields of the main generators. The total length of each turbine-generator will be 103 feet and the total weight 1,650,000 pounds.

The first open-hearth furnace for the manufacture of steel by the Siemens-Martin process was built in this country in 1868 at Trenton, N. J.

Bars

Steady Buying and Shipments Continue, Exceeding Previous Year

CONSUMPTION of steel bars continues heavy, with specifications and orders at a high rate. Prices for fourth quarter delivery are expected to be announced shortly. The situation is strong. Buying continues in small lots and stocks have not been accumulated. Fall business is expected to continue at a high rate.

BAR PRICES, PAGE 662

Chicago, Sept. 7.—Specifications for soft steel bars show no let-up, but are running fully up to those of the last week in August. Sales for the eight-month period ended with August were 14 per cent ahead of the similar period last year, while specifiations gained more than 15 per cent. Shipments in that period were better than 12 per cent over those of the corresponding eight months a year ago. Automotive interests are expected to absorb a heavy tonnage for at least 30 days more, prior to the customary late autumn slackening in output. Several automotive plants tributary to Chicago are reported to have made record outputs in August, and are scheduling similar heavy production for September. A western road will place 3000 tons of bars, plates and shapes soon. Consumption of bars by implement interests shows no tendency to dip. Mills report fewer irregularities in the price situation than is customary, and have booked fairly heavy tonnages of soft steel bars for fourth quarter at 2.10c.

Boston, Sept. 7.—Sales of steel bars have recovered the ground lost a week ago and are now running close to the average of August. The price is firm at 2.00c Pittsburgh or 2.365c delivered. Inquiry is largely scattered and indicates a continuance of at least the present rate of buying.

Pittsburgh, Sept. 7.—Leading makers of merchant steel bars have not announced fourth quarter prices but the tendency is toward higher levels. Producers believe that, having successfully bridged the summer gap, without a real letdown in demand, they will continue to realize heavy specifications through fall and winter. Some large users will continue to pay 2.00c but an increasingly large number of small orders is being taken at 2.10c. Customers are actively specifying against this quarter's contracts and bar mill operation is practically uninterrupted at 85 to 90 per cent, some plants operating full.

Makers of refined iron bars enjoyed a more or less spasmodic demand, with all buying being done piecemeal. Nobody is anticipating wants because deliveries continue good. The price starts at 3.00c.

Buffalo, Sept. 7.—Fourth quarter specifications for bars are improving. Considerable business is in prospect for September. Going quotations are 2.265c for third quarter and 2.365c for fourth quarter. Some mills may accept the lower price for combination third and fourth quarter tonnage. Mill operation is close to 85 per cent of capacity.

Cleveland, Sept. 7.—New business in soft steel bars has been light, reflecting the holiday period, but this month gives every promise of continuing the good rate of August and accounting, as well, for the usual September pickup. Consumers' inventories are light, as shipments have been translated into finished products. One Pittsburgh district maker experienced in August the best month of the year for this territory. Soft steel bars are quoted at 2.00c, Pittsburgh, or 2.19c, delivered Cleveland.

Philadelphia, Sept. 7.—Mills report steady bar bookings, but are not sufficiently scheduled to interfere with quick shipments. The larger mills generally are maintaining 2.00c, Pittsburgh, but occasionally sales of attractive lots are made at 1.90c, and 1.95c.

Hoops and Bands

Steady Flow of Orders and Specifications at Steady Prices

HOOP PRICES, PAGE 662

Pittsburgh, Sept. 7.—Hoop and band users still order piecemeal but each week's orders are sufficient to maintain practically full operation of the narrow mills of hot flat makers. Some fourth quarter business has been signed at 2.50c, and additional contracts are coming in each week. Automotive business appears to give promise of continuing into the winter. Other lines of manufacture are taking their quotas and September will probably exceed August both in bookings and shipments.

Furnaces Are Repaired

Marting Iron & Steel Co. had its Ironton, O., blast furnace off blast 21 days in August undergoing repairs. A new lip ring and bell was put on the stack and repairs were made to the bustle pipe and stoves. The company is building a new stove at its Marting plant and rebuilding the trestles. The stack also will be relined.

Clinton Iron & Steel Co., Pittsburgh, blew out its blast furnace on Sept. 1 on account of a breakout.

Structural Shapes

Following Heaviest Week of Year, Awards Drop Down to Yearly Average—Immediate Shipment Not Always Obtainable

ST. LOUIS contributes the outstanding structural award of the week with 9000 tons for a court house, placed with an independent fabricator. Pittsburgh takes tock of its building program and finds it approximates $100,000,000, alithough not all projects included give promise of an immediate start. No recession is in sight at Chicago and some fabricators are reported to be increasing their stocks of plain material. New business at Chicago has equalled shipments. The structural market still lags at Cleveland, but hope is held out for improvement this month. Structural prices are unchanged and show firmness. Some shops are booked two months into the future. Immediate delivery is difficult.

STRUCTURAL SHAPE PRICES, PAGE 662

Chicago, Sept. 7.—Fabricating shops in the Chicago district are comfortably booked for two months ahead. No recession in building activities appears in sight, and fresh inquiry is reported each week. It is reported that recent heavy shipments from the mills reflect the desire of some of the users of plain material to take advantage of present prices. Buying has been practically even with shipments. Three projects in the Chicago loop to be awarded shortly will take 25,000 tons of structurals.

Boston, Sept. 7.—The structural shape market the past week has been quiet. A fair run of small contracts is reported by one fabricator, but practically nothing of size has been let. The price is firm at 2.00c, Pittsburgh, or 2.365, delivered. Fabricating shops are busy and much work is being figured.

New York, Sept. 7.—Structural activity has been improving, with pending work showing good gains. Fabricating shop and mill operations are being maintained at a high rate. Immediate shipments are sometimes difficult to obtain. Prices are firm.

Pittsburgh, Sept. 7.—Building programs are so extensive the outlook is bright for structural shape fabricating shops. Pittsburgh, for instance, has under way a $100,000,000 building program. Some fabricators report a tendency toward strength in prices; others claim there still is much to be desired, and that competition remains keen as it has been for 18 months. Mill prices are 2.00c to 2.10c, with a tendency on the part of mills to avoid commitments for the fourth quarter at lower than the maximum.

Cleveland, Sept. 7.—Structural shape demand continues to lag behind the pace set by other heavy finished products. It is believed, however, that several bridges about to come out for figures will put life into the market. The Hunkin-Conkey Co. will have 600 tons to place for an Atlantic City, N. J., hotel. The steel for the Girard, O., bridge was to be placed today or tomorrow. Plain material is quoted at 2.19c, Cleveland.

CONTRACTS PLACED

9000 tons for new civil court house, St. Louis, to Mississippi Valley Structural Steel Co.

Awards Compared

	Tons
Awards this week	34,225
Awards last week	68,535
Awards two weeks ago	16,215
Awards this week in 1925	15,801
Average weekly awards, August	22,085
Average weekly awards, 1926	29,080
Total awards to date, 1925	1,169,171
Total awards to date, 1926	1,052,042

6550 tons are involved in the following awards at New York:

Apartment Lexington avenue and Paterson bridge; apartment Fifth avenue and Eighth street; loft, 250 West Thirtieth street; signal light support Paramount building, all to the Hedden Iron Construction Co.

Parish house, Bleecker and Elizabeth streets; Bridge for Long Island railroad in Queens borough, to Harris Structural Steel Co.

Central pumping station for Tidewater Oil Co., Bayonne; office for Brooklyn Union Gas Co., Brooklyn; hunting lodge for H. H. Rogers, Southampton, L. I.; public school, Newburgh, N. Y., to McClintic-Marshall Co.

Yeshiva College of America, 186 Amsterdam avenue; office building 15 park place; five-story office building, 524 Fifth avenue; three-story garage, Hempstead, L. I., to Levering & Garrigues Co.

Theater, McCombs road, Manhattan, theater Myrtle avenue, Brooklyn, to Hinkle Steel Construction Co.

Pierce Arrow garage, Jersey City, N. J., to Shoemaker Bridge Co.

3000 tons for 31-story Rubenstein building, Fifty-ninth street, New York, to Park Construction Co.

2500 tons, addition to Edward G. Budd Mfg. Co., Philadelphia, to Belmont Iron Works.

1700 tons, apartment hotel at West End avenue and Ninety-fifth street, New York, to Hedden Iron Construction Co.

1700 tons, office building for Westchester Lighting Co., Mount Vernon, N. Y., to Jones & Laughlin Steel Corp.

1500 tons, tank shop, Pennsylvania railroad, Altoona, Pa., to McClintic-Marshall Co.

1200 tons, tank car service shop for Pennsylvania railroad at Altoona, Pa., to McClintic-Marshall Co.

1000 tons, addition to White Sox baseball grandstand, Chicago, to American Bridge Co.; Osborne Engineering Co., Cleveland, engineer.

800 tons, bridge for Boston & Maine railroad, to American Bridge Co.

700 tons, bridge at Brewster, Wash., to unnamed fabricator.

600 tons, for plant of Southern Malleable Iron Co., East St. Louis, Ill., to St. Louis Structural Steel Co.

500 tons, distribution station for New York Edison Co., New York, to Hedden Iron Construction Co.

500 tons, free academy at Newburgh, N. Y., to unstated fabricator.

380 tons, power house for Commercial Solvents Corp., Peoria, Ill., to Mississippi Valley Structural Steel Co.; Stone & Webster, Inc., 38 South Dearborn street, Chicago, contractors.

360 tons, Professional building, Engin, Ill., to Rochester Bridge Co.

350 tons, substation, Wilson dam, Ala., to American Bridge Co.

300 tons, steelwork on gasoline stills, Texas Co., for Tulsa, Okkla., Casper, Wyo., and Lockport, Ill., to Mississippi Valley Structural Steel Co.

300 tons, miscellaneous work including power house at Tarentum, Pa., and building at Jenkins, Ky., to the Pittsburgh-Des Moines Steel Co.

250 tons, Chatelaine tower, East Chestnut street, Chicago, to Hansell-Elcock Co.; Fitzgerald Construction Co., 105 West Monroe street, Chicago, contractor.

200 tons, theater, Thirty-first and K streets, Sacramento, Calif., to Schraders Iron Works.

200 tons, highway bridge in Vermont, to Boston Iron Works.

150 tons, high school, McKees Rocks, Pa., to Pittsburgh-Des Moines Steel Co.

150 tons, plant for Otto Engine Works, Philadelphia, to Belmont Iron Works.

125 tons, crane runway for Western Electric Co. Hawthorne plant, Chicago, to McClintic-Marshall Co.

110 tons, Pennsylvania railroad track scale, to Shoemaker Bridge Co.

100 tons, McCrory store building, Charleston, W. Va., to Pittsburgh-Des Moines Steel Co.

CONTRACTS PENDING

10,000 tons approximately, for 45-story office building for Chanin Corp., Forty-second and Lexington, New York, bids asked.

5000 tons, power house by Stone & Webster, Inc., at Havre de Grace, Md.; bids in.

4500 tons, power house for Susquehanna Electric Co., Conowingo, Md.; Stone & Webster, Inc., contractors.

3200 tons, Clark building, Pittsburgh.

1500 tons, Central Y. M. C. A., Brooklyn, N. Y.

1500 tons, plant for Westchester Lighting Co., Mount Vernon, N. Y.

1200 tons, Huntington Hall apartment building, Philadelphia.

900 tons, Pennsylvania railroad electrification in Philadelphia and Wilmington, Del.

800 tons, shops for Boston & Maine railroad at Billerica, Mass.

800 tons for 15-story apartment 37 East Sixty-fourth street, New York, bids asked.

750 tons, addition to St. Joseph's hospital, San Francisco; bids Sept. 15.

620 tons, dining hall for Girard college, Philadelphia.

600 tons, apartment at Madison avenue and Seventieth street, New York, bids asked.

600 tons, Seaside hotel, Atlantic, City, N. J.; Hunkin-Conkey Co., Cleveland, general contractor.

500 tons, Union Theological seminary, New York (not awarded, as previously reported).

424 ton, Warner Bros theater, Hollywood, Calif.; bids received.

350 tons, addition to Otic Elevator Co., Yonkers, N. Y.

320 tons, Pina building, Tucson, Ariz.; bids being received.

200 tons, Wheatsheaf Lane Pumping station, Philadelphia; Edward Fay & Son, con-

tractor.
200 tons, platform canopies for Erie railroad at Paterson, N. J.
150 tons, apartment on Larkin street, San Francisco; bids in.
100 tons, bridge over San Lorenzo Creek, Hayward, Calif.; bids Sept. 20.
Unstated tonnage, buildings for Guaranteed Liquid Measure Co., Rochester, Pa.; bids to be asked.
Unstated tonnage building expansion for Empire Oil Works, Oil City, Pa.; bids to be asked.
Unstated tonnage, Allegheny county bridge across Monongahela river between Glassport and Clairton, Pa.; word received from Washington that war department approved application.
Unstated tonnage, Allegheny county bridge across Allegheny river between Thirty-first street, Herr's island and Northside, Pittsburgh; word received from Washington that war department approved application.

Railway Tool Foremen Discuss Problems

Attendance at the fourteenth annual convention of the American Railway Tool Foremen's association, Hotel Sherman, Chicago, Sept. 1-3, exceeded the 1925 meeting by 70 per cent. Sixty-two carriers were represented.

The Society's Supply association held an exposition of tools and machinery. About 75 makers of tools, tool steels, machine tools, drills and railway supplies exhibited their products.

Possibilities and accomplishments of standardization were outlined by Edwin W. Ely, assistant director, department of commerce, Washington.

The report on "New Labor Saving Tools and Devices for the Air Brake Department" brought out considerable discussion. Grinding of air pump cylinders rather than boring was recommended, although O. D. Kinsey, Chicago, Milwaukee & St. Paul railroad, advised boring if perfect alignment could be maintained. Another interesting report was on the subject "Training of Men Suitable for Toolroom Work."

The standardization committee recommended a reamer having a spiral of 30 to 35 inches in one turn, at an angle of 18 degrees in 1½-inch diameter, with 10 flutes. A vote of approval was rendered on recommendations of the division of simplified practice, department of commerce, covering grinding wheels and milling cutters.

Election of officers resulted as follows:

President, O. D. Kinsey, Chicago, Milwaukee & St. Paul railroad, Milwaukee; first vice president, E. A. Greame, Delaware, Lackawanna & Western railroad, Scranton, Pa.; second vice president, W. R. Millican, Missouri, Kansas & Texas lines, Parsons, Kans.; and third vice president, H. P. Jones, Oregon Short line, Pocatello, Idaho. C. G. Macine, Chicago, Milwaukee & St. Paul railroad, Chicago, was re-elected secretary and treasurer.

New members of the executive committee were selected as follows: Chairman, J. T. Jones, New York Central railroad, Collinwood, O.; J. T. Sumner, Michigan Central railroad; C. A. Schaffer, Illinois Central railroad, Chicago; C. F. Harney, New York, New Haven & Hartford railroad, Readville, Mass., and W. J. Hynes, Missouri Pacific railroad.

Concrete Bars

All Districts Look for September to Show Revival of Interest in Market

OUTSTANDING award of the week is that of 1800 tons for a concrete pipe line at Providence, R. I. Chicago warehouses are predicting a record month. Minimum carloads constitute the bulk of the activity at Pittsburgh. Prospective jobs at Cleveland are neither large nor numerous. Prices are shaded at Chicago in the face of keen competition.

REINFORCING BAR PRICES, PAGE 662

Chicago, Sept. 7.—Reinforcing bar warehouses are expecting record-breaking placements of bars this month. A large number of projects are pending, comparatively few awards having been made in the past 10 days. It is expected more awards will develop shortly, especially those involving projects that are to be under roof by cold weather. Pending business is considered heavier than at any time this year. Competition continues sharp, resulting in shading of prices.

Boston, Sept. 7.—While inquiry in the concrete bar market continues good, actual sales have been few and competition for these is keen. The market lacks strength. The warehouse range is from 3.00c to 3.265c and the mill price from 1.90c to 2.00c.

Buffalo, Sept. 7.—Demand for reinforcing bars has picked up again, with a number of new municipal and other projects coming out for construction starting this autumn. Inquiry for bars for shipment before cold weather is of larger proportions and warehouses have been getting a good amount of business for prompt shipment. Mills quote 2.265c on large lots and 2.75c on lots to be shipped from mill stocks. Pending inquiries include lots ranging up to 400 tons.

Pittsburgh, Sept. 7.—Several awards in reinforcing concrete bars involving up to 150 tons have been made but the majority of the awards continue to involve minimum carloads or even less. Some road work is up for attention but on the larger projects a tendency already manifested is to postpone activity until next spring. Mill prices are unchanged at 2.00c to 2:10c.

Cleveland, Sept. 7.—August business in concrete reinforcing bars was a shade heavier than July, but was not satisfactory. The market still reflects the building trade strikes of last spring and is not so active as might be expected at this time. Several sellers believe September will correct this condition. Mill prices on reinforcing bars are 2.19c, Cleveland, with small lots commanding 3.00c. Rail steel bars are quoted at 1.80c to 1.90c, mill.

Awards Compared

Awards this week	6,120
Awards last week	8,731
Awards two weeks ago	8,780
Awards this week in 1925	2,800
Average weekly awards, August	6,699
Average weekly awards, 1925	6,404
Total awards to date, 1925	227,467
Total awards to date, 1926	230,276

CONTRACTS PLACED

1800 tons, by Lock Joint Pipe Co., Ampere, N. J., to Carnegie Steel Co., for pipe line at Providence, R. I.
1300 tons, Central Manufacturing district warehouse, Chicago, to Calumet Steel Co. S. Scott Joy, 2001 West Pershing road, Chicago, architect.
560 tons, Chatelaine Tower hotel, Chicago, to Calumet Steel Co. Roy F. France, 155 North Clark street, Chicago, architect.
450 tons, Clinton Square hotel, Joliet, Iill., to Concrete Steel Co.
381 tons, Riverside drive and Dayton avenue viaduct, Los Angeles, secured by unnamed interest.
300 tons, bridge near Camden, N. J., to Kalman Steel Co.; Stange Construction Co., general contractor.
300 tons, addition to plant of Edward G. Budd Mfg. Co., Philadelphia, to American Steel Engineering Co.
300 tons, filtration plant at South Haven, Mich., to Concrete Steel Co.
150 tons, Insurance Exchange building, Pittsburgh, to an independent fabricator.
147 tons, Dog Creek bridge, Delta, Calif., to unnamed interest.
122 tons, Rogue river bridge, Gold Hill, Oreg., to unnamed interest.
110 tons, warehouse for Diamond Ice & Coal Co., Wilmington, Del., to Milton Mfg. Co.
100 tons, Law & Finance building, Pittsburgh, to an unnamed fabricator.
100 tons, garage in Spring street, Philadelphia, to Concrete Steel Co.

CONTRACTS PENDING

450 tons, Gibson dam, Fairfield, Mont. Utah Construction Co. low bidder.
400 tons, warehouse for Cleveland Bonded Warehouse Co.
400 tons, La Sallo county water improvement district, Cotulla, Tex.; bids Sept. 15.
200 tons, Wheatshead Lane pumping station, Philadelphia; Edward Fay & Son, contractor.
160 tons, warehouse for Sam Davis Co., Toledo, O.; general contract to A. Bentley & Sons Co., Toledo, O.
150 tons, Southwestern Bell Telephone Co. branch station, St. Louis.
100 tons, Stanley theater, Baltimore.

On his inspection trip to Mindanao island, the Philippines, Carmi A. Thompson, of Cleveland, viewed an outcrop of iron ore which it is

claimed can be laid down in San Francisco cheaper than Lake Superior ore is carried to Pittsburgh, according to a coyprighted dispatch to the *New York Times.*

Steel Export Increase Appears Unlikely

"The world's output of pig iron in the next 50 years will not keep pace with British estimates," declared Dr. John A. Mathews, vice president, Crucible Steel Co. of America, in an address given recently before the division of industrial and engineering chemistry of the American Chemical society. "Less rapid increase in population," he continued, "with no increase in exports, will keep the United States from producing its share of the 120,000,000 tons of pig iron which, according to the prediction of Sir Robert Hadfield, Liverpool ironmaster, the world should produce in 1976.

"Population will not increase as rapidly during the next 50 years as it did in the period 1876-1926, especially if our present immigration policy continues," Dr. Mathews adds. "The birth rate usually declines with advancing civilization, wealth and culture. These circumstances should tend to lower the demand for steel in the future below present day concepts.

"Our exports of iron and steel never have been a large part of the total production, probably not over 5 per cent. We do not expect this to increase. With modern methods of transportation, the more backward manufacturing countries may be expected to increase their consumption of iron and steel products. This normally would tend to increase imports of this nature, but there already is a marked tendency for such nations to develop their own resources. "It seems quite certain that iron and steelmaking will be much more widely scattered in the future and that we not only shall have severer competition in our present export trade, but also, new markets will be harder to develop and competition from new and unexpected sources may be expected."

Statistical Report Out

The American Iron and Steel institute has just published its annual statistical report for 1925. This book which contains complete information on the production of iron and steel in the United States over a period of years and including 1925, includes the numerous production reports issued by the institute in bulletin form from time to time. In the letter of transmittal from the secretary to the president of the institute, which serves as a foreword, is embodied the report of the special committee appointed to establish the country's productive capacity for pig iron and steel. Copies of the report are to be obtained from the American Iron and Steel institute, 40 Rector street, New York.

Rails, Cars

Rail Production Droops But 1927 Placements Near—Southern Pacific Places 24,000 Tons

GOOD earnings, especially of western carriers, are regarded as assuring satisfactory programs. Rate at Gary rail mill is reduced as 1926 contracts are worked off. August freight car bookings, totaling 152, were lowest in many months. Miscellaneous rail orders booked at Chicago aggregate 10,000 tons, with 2500 tons of fastenings.

RAILROAD TRACK MATERIAL PRICES, PAGE 662

New York, Sept. 7.—Domestic freight car awards for August, totaling 152 cars, were among the smallest on record. In fact, the only outstanding item of business was the contract for 2000 freight car repairs for the Pennsylvania railroad. With several substantial lists actively pending, the current month, however, should show a substantial improvement. Following is a comparative statement:

August	152
July	1,265
June	4,285
May	448
April	4,615
March	8,995
February	12,895
January, 1926	8,830
December	16,885
November	11,685
October	11,145
September	7,905
August	2,875
July	800
June	1,835
May	6,985
1923 total	103,487
1924 total	144,425
1925 total	77,110

Following a fairly active week, locomotive business has been negligible.

Pittsburgh, Sept. 7.—On light rails the market is fairly well defined at $33, price cutting under that level having diminished. This is due to an increased demand, plus a shortage of 40-pound sections.

The Southern Pacific has placed 13,691 tons of 75-pound rail with the Bethlehem Steel Corp. and 10,000 tons with the United States Products Co. Rail buying for 1927 delivery has not progressed far, but it is estimated that it will reach at least 2,000,000 tons for replacements, not counting expansions. Of that tonnage, it is understood that only 150,000 tons are now under order.

Small orders predominate in track fastenings. On standard spikes 2.80c is quoted steam in carload quantities or larger, while 2.90c is the figure named for other than steam roads. Tie plates are quiet but nobody is willing now to quote less than 2.35c. Small spikes are active in keeping with the light rail demand from coal mine operations. The usual figure is 3.00c, but 2.90c has applied on attractive specifications.

Chicago, Sept. 7.—Railroad inquiries for 1927 requirements are likely to appear within the next two weeks. Several western roads are working up schedules. Further decreased rail mill operations at Gary have cut down ingot output for the district slightly. In view of the encouraging freight earnings of the railroads, mills are expecting little backwardness in 1927 rail and car requirements. Miscellaneous lots of standard rails booked the past week have aggregated more than 10,000 tons. Bookings of tie plate totaled 2500 tons.

A western railroad is inquiring for steel frames for 500 box cars, and for 2000 axles for this order. Several car inquiries pending for more than a month still remain to be placed. Car building operations are dwindling steadily in the face of restricted business.

CAR ORDERS PLACED

Chicago & Eastern Illinois, 500 hopper cars, reported placed with the Mount Vernon Car & Mfg. Co.
Chicago Great Western, 300 box and 200 automobile cars, to Pullman Car & Mfg. Corp.
Keenan Supply Co., two hopper cars to Pressed Steel Car Co.
Mystic Iron Works, ten ore cars to General Equipment Co.

CAR ORDERS PENDING

Cheswick & Harmer, Philadelphia, 10 hopper cars, pending.
Chicago, North Shore & Milwaukee, four caboose cars, pending.
Interstate Oil Shipper Line, Chicago, 40 tank cars, bids asked.
Westinghouse Air Brake & Mfg. Co., five dump cars, pending.
Sinclair Refining Co., 16 coke cars, pending.
Youngstown Sheet & Tube Co., 28 Slag cars.

Alabama Mills Are Busy

Birmingham, Ala., Sept. 7.—Steel production, finishing mills and fabricating works continue active with prospects of continuation through remander of the year. Rail mill of Tennessee Coal, Iron & Railroad Co. has been operating day and night. This mill will begin shortly to roll rails for export to China; it has finished an order for Japan. Tank shops are busy. Four new open-hearth furnaces at Fairfield are expected to be completed in October.

Pig iron manufactured from bituminous coke is claimed to have been first made as a regular product in the United States near Uniontown, Pa., in 1836.

The Market Section

Wire

Steady Buying Continues in All Markets—Coated Nail Extras Are Revised

SHIPMENTS of wire and its products continue at a high rate, the present volume being larger than the corresponding period last year, though the total for the year to date is slightly less than last year. Revision of extras on coated nails has been made to equalize irregularities in the former card. Prices are firm and talk of advance is heard.

WIRE PRICES, PAGE 662

Chicago, Sept. 7.—Steady consumption of wire and wire products is indicated by jobbing trade bookings, which are conservative but steady. The manufacturing trade is improving its specifications and buying. The somewhat advanced seasonal buying movement which developed in August helped to put the month's bookings ahead of July, and practically at a level with August last year, which also was a good month. Demand for woven fencing and barbed wire is improving. Revision of the card of extras of Feb. 1, 1926, will increase the price of coated nails slightly. The revision, which becomes effective as of Sept. 1, was adopted to equalize what were considered irregularities in the original card, which based its differentials on theoretical costs.

Pittsburgh, Sept. 7.—From present appearances September will be somewhat better as a producing and shipping month for wire products makers than either July or August. It is generally conceded, however, that buying and specifying in the past two months aggregated higher than in the same period in 1925. However, the total tonnage for the year in many cases is somewhat below that of the first eight months of last year. Additional orders for fencing are coming through and manufacturers are anticipating no setback. The desirability of higher prices still is talked about but the present levels are holding firmly, 2.50c on plain wire and 2.65c on wire nails.

Worcester, Mass., has been dropped as a basing point for cold finished screw stock.

Boston, Sept. 7.—Demand for wire from specialty manufacturers continues active. One wire manufacturer has increased production during the week. The price holds at 2.65c Worcester. Nails are in good demand.

Bolts, Nuts, Rivets

Fourth Quarter Prices Expected Soon —Large Order Is Placed

NUT AND BOLT PRICES, PAGE 662

New York, Sept. 7.—The largest bolt and nut order placed in eastern territory recently has gone to the Oliver Iron & Steel Co. This involves several carloads placed in Norfolk for shipment to the Boston navy yard. The market now is quiet but contracts will come up next week for renewal over fourth quarter. It is expected that the 50, 10 and 10 discount basis will be continued. It is estimated that bolt and nut shops of the country now are averaging about 50 to 65 per cent of their maximum production.

Pittsburgh, Sept. 7.—Late this week makers of nuts, bolts and rivets will probably announce prices for the fourth quarter. Steady demand is enjoyed, with larger users ordering liberally. Jobbers are permitting mills to carry their stocks for them, so that their orders are more numerous but individually small. This also is true of rivets. Some attractive tonnage is being placed at 2.60c but large individual quantities usually carry the 2.50c price. On small rivets the discount is 70, 10 and 5 off. Nut and bolt operations are on a 70 to 75 per cent basis, while rivetmaking is somewhat less.

Chicago, Sept. 7.—Fourth quarter bookings of bolts, nuts and rivets will get under way shortly, it is indicated. With the exception of stove bolts, which were advanced by western makers, effective Sept. 1, quotations on bolts and nuts for third quarter likely will go over unchanged into fourth quarter. Whether the steady specifications of August will continue this month is a question, since implement works and other users took care of a good share of their fall needs last month. August specifications were slightly ahead of July, and far exceeded those of August, last year.

Strip Steel

Hot Strip Firm but Some Shading in Cold Product

STRIP PRICES, PAGE 662

Pittsburgh, Sept. 7.—While the situation as regards fourth quarter hot strips is well clarified and some contracts at 2.30c are coming back signed, the situation as regards cold strips is not so clear. Leading makers here claim they are asking and receiving 3.60c on all business in that grade. Competition at 3.50c is being encountered in a few directions but is not being recognized. Demand is better and operations are 75 to 80 per cent of capacity. The Superior Steel Corp. for the first time in six or seven weeks operated its hot mills last Saturday and hopes to continue doing so. In keeping with others, its finished output in August was slightly less than July, although orders booked in August were somewhat better than the preceding month. So far in September the buying rate is better than it was in August.

Cold Finished Steel

August Business Exceeds July and Prices Are Firm

Pittsburgh, Sept. 7.—In practically every case of local and nearby producers of cold-finished steel bars, August shipments were greater than July. August likewise was a better month for new bookings and September promises to exceed August in both respects. No fourth quarter prices are named, finishers awaiting an announcement of the hot bar price for that period. Around 80 per cent is the general average rate of operation and the price is firm at 2.50c.

Refractories

Sustained Demand and Advancing Prices Feature Brick Market

REFRACTORY PRICES ON PAGE 691

Pittsburgh, Sept. 7.—Sustained demand, with individual orders small, is the feature of the refractories market. Makers of silica brick, who advanced their quotations by $3 Sept. 1 have the largest backlogs for the reason that large quantities of brick for by-product coke oven installation have been numerous. The advance to $43 in Pennsylvania and to $52 in Chicago appears to be fully effective as far as at least 85 per cent of the silica brick industry is concerned. One or two small makers continue to follow their policy of quoting below the regular market. A few protections still are out at $40 and $49, but these gradually are being closed up. Fire clay brick manufacturers have not taken price action but chrome brick went up $5, to $50. Several makers have advanced magnesite brick $5, and it is now quoted at $65 to 70.

Car Surplus Decreases

Washington, Sept. 7.—Class I railroads on Aug. 22 had 168,884 surplus freight cars in good repair and immediately available for service, according to the car service division of the American Railway association. This was a decrease of 2385 cars compared with Aug. 14. Surplus coal cars in good repair on Aug. 22 totaled 38,813, a decrease of 1887 within approximately a week, while surplus box cars totaled 96,948, a decrease of 246 cars in the same period.

Nonferrous Metals

Buying Only Moderate and Prices Fluctuate Slightly, the Market Being Alternately Easy and Firm—Shipments Are at High Rate

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Spot Straits Tin, N. Y.	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Sept. 1	14.35	14.50	13.95	66.12½	8.87½	8.62½	7.42½	27.00	15.50	35.00
Sept. 2	14.32½	14.50	13.90	65.75	8.87½	8.62½	7.42½	27.00	16.00	35.00
Sept. 3	14.35	14.50	13.90	66.00	8.87½	8.65	7.42½	27.00	16.00	35.00
Sept. 6—Holiday										
Sept. 7	14.35	14.50	13.90	67.25	8.87½	8.62½	7.42½	27.00	16.00	35.00

NEW YORK, Sept. 7.—Light to moderate buying characterized the nonferrous metals last week. The market was alternately easy and firm. Changes in prices were only a few points. It was a little desire for better forward orders in some quarters that caused easiness here and there but the market could not have been called weak at any time. Shipments of all metals remained high, and copper producers report that specifications against September shipments already are nearly complete.

Mill products are selling slowly at present, particularly copper wire and cable. However, brass mills are running at good rates, probably about like steel mills, and wire mills are going fairly well. Both groups are catching up on shipments. Lack of strength in copper causes buyers of products to hold off where tonnages are involved, but so far there have been no major cuts in base prices of products.

Prices of metals today, except tin, are materially lower than a year ago, but it is interesting to note that conditions now are closely parallel with those of that time, and prices were strong last autumn. Tin is the highest it has been since 1919.

Copper—In the past week copper sold moderately at 14.37½c. Connecticut and 14.50c to 14.55c Midwest, but at midweek some metal appeared under the price of 14.37½c. and a fair tonnage could have been had about 5 points lower though most large producers remained firm. The conviction is expressed by most factors in the market that good buying will be done for the autumn, between Labor day and the end of the month.

Zinc—About a week ago prime western was fairly active at 7.45c East St. Louis. However, some metal was pressed on the market and there were offers at 7.40c. At first this offering made the market look weak but it developed that only a small tonnage could be had at that figure and the bulk of sales later in the week went at 7.42½c, with the market closing before the holiday strong at this figure and a renewal of buying. Galvanizers are interested mostly in prompt and September shipments and this is one reason heavy buying is not required to make the market recover each time that a little easiness appears. Evidently demand and supply are in balance. Brass special is a little stronger, some sales being made lately as high as 7.55c. High-grade brass is steady at 9.00c.

Tin—The plating metal has had rather a quiet market the past week but some business has been done, the buying by consumers being mainly for early delivery. Dealers have bought moderately of futures. The premium of prompt over futures recently increased again, to almost 2 cents, but in the past day or two futures have shown greater relative strength. Another reduction in the world visible supply at the end of last month carried that factor to the lowest point in many years, especially if considered in the light of the fact that consumption seldom has been near present level. Use this year has outrun output and that is the reason for unusually high prices. At such heights the price is subject to quick turns but it is likely that the tight situation will continue for several months, even if production should be increased a little this autumn in the Malay states.

Lead—After a little easiness recently, caused largely by the sudden break abroad, the market has become firmer again and good buying has been done in the Middle West. Output continues unusually large and consumption also remains on a high level.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
High brass	19.37½
Copper, hot rolled	23.00
Zinc, (100-pound base)	11.75
Lead full sheets (cut ¼c more)	13.00 to 13.00
Aluminum, bright flat, up to 10 gage	36.50
SEAMLESS TUBES	
High brass	24.25
Copper	25.00
RODS	
High brass (round ⅝ to 2½-inch)	17.12½
Naval brass	19.87½
WIRE	
Copper, small lots	16.50
High brass	19.87½

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	8.75 to 9.00
Chicago	9.00 to 9.25
Cleveland	9.25 to 9.50
HEAVY YELLOW BRASS	
Chicago	8.00
Cleveland	7.25 to 7.50
ZINC	
New York	4.25
Cleveland	5.00 to 5.25
HEAVY COPPER AND WIRE	
New York	11.75 to 12.00
Chicago	10.75 to 11.50
Cleveland	11.50 to 11.75
RED BRASS BORINGS	
New York	8.25 to 8.50
YELLOW BRASS TURING	
Cleveland	7.50 to 7.75
LIGHT COPPER	
New York	9.50 to 9.75
Chicago	9.50 to 9.75
Cleveland	10.00 to 10.25
LIGHT BRASS	
Chicago	7.25
Cleveland	6.25 to 6.50
ALUMINUM	
Clippings	21.00 to 22.00
Borings, Cleveland	13.00 to 13.50
Cast	18.50 to 19.00

Secondary Metals

Remelt aluminum No. 12	22.50 to 23.00
Brass ingot, 85-5-5-5	12.25 to 12.50

Coke By-Products

Demand for Distillates Continues Active—Prices Steady

New York, Sept. 7.—Distillates are moving more briskly, with lacquer interests particularly active in buying toluol. With production more or less adjustable, shipments are sufficient to meet requirements. Prices are unchanged. Pure and 90 per cent benzols are quoted at 25 cents per gallon, works, for material in tank car lots and 30 cents in drums; toluol and solvent naphtha at 35 cents, works in tanks, and 40 cents in drums and commercial xylol at 36 cents, works in tanks and 41 cents in drums.

Activity in sulphate of ammonia is comprised almost entirely of shipments against back orders, placed by the fertilizer industry. Export demand is virtually negligible. Prices, meanwhile, are steady at $2.45 to $2.50, delivered, for domestic business and $2.45 to $2.50, port, for material in double bags for export.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots	Spot	Contract
Pure benzol	$0.25	
90 per cent benzol	0.25	
Toluol	0.35	
Solvent naphtha	0.35	(nominal)
Commercial xylol	0.36	(nominal)
Phenol	0.22	0.22
Per Pound at Producers' Plants		
Naphthalene flakes	0.06½ to 0.07	
Naphthalene balls	0.07½ to 0.08	
Per 100 Pounds Delivered		
Sulphate of ammonia	2.47½	

Warehouse

New Bases on Black and Galvanized Sheets Being Adopted—September Opens Auspiciously in Most Districts—Prices Hold

JOBBERS in New York metropolitan district, have placed black and galvanized sheets on a No. 24 gage basis. They are now quoting No. 24 gage galvanized sheets at 5.10c, with No. 16 gage and heavier at 5.35c, and No. 24 gage single pass sheets at 4.35c. All other prices are unchanged with demand generally active.

Reinforcing bars are especially active in the Buffalo market. Other materials are holding in sales volume at recently established levels and specifications indicate no slacking of business in September. The new extras on wire and cement coated nails are now in effect and the new sheet base and differentials become effective Sept. 7. Otherwise prices are unchanged and being firmly maintained.

Demand for iron and steel warehouse products at Detroit continues strong. While August business showed an increase over both June and July, September tonnage is expected to surpass that of August. Demand for sheet steel and structural products features, with demand for other grades satisfactory. Operators are maintaining heavy warehouse stocks in anticipation of good business. Prices are steady and unchanged.

August proved a satisfactory month to St. Louis distributors of iron and steel goods from store. One leading interest reported sales the largest for any August on record, and all were ahead of the corresponding period last year. A feature of demand is its balance. All building materials are moving well at St. Louis but reinforcing goods are by far the most active item. This is explained by heavy road construction and numerous docks, sewers, and other municipal works.

While Cleveland warehouses expect to put into effect the new No. 24 gage base and differentials for black and galvanized sheets, sales still are being made on the old basis. Warehouse business at Cleveland in August was the largest for any month this year, in the case of one interest.

Jobbers at Philadelphia have followed the lead of the mills in establishing No. 24 gage as the base on black and galvanized instead of No. 28 gage. The new warehouse prices are higher for the lighter gages and lower for the heavier gage. On

(*Continued on Page 677*)

Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.15c
Ft. Worth	3.75c
Los Angeles	3.20c
New York	3.24c
Philadelphia	2.90c to 3.10c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.80c

IRON BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
Ft. Worth	3.75c
New York	3.24c
Philadelphia	3.10c
St. Louis	3.15c
Tulsa	3.80c

REINFORCING BARS

Boston	3.00c to 3.265c
Buffalo	3.30c
Chicago, billet	2.40c to 2.60c
Chicago railsteel	1.90c to 2.00c
Cincinnati	3.20c to 3.30c
Cleveland	2.50c to 3.00c
Detroit	3.15c
Ft. Worth	3.75c
Los Angeles, C.L.	3.05c
Los Angeles, L. C. L.	3.30c
New York	3.15c
Philadelphia	3.15c
Pittsburgh	2.50c to 2.60c
San Francisco, C. L.	3.35c
San Francisco, L. C. L.	3.30c
Seattle	3.25c
St. Louis	3.15c
Tulsa	3.80c
Youngstown	2.50c to 2.60c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.25c
Ft. Worth	4.50c
Los Angeles	3.20c
New York	3.34c
Philadelphia	2.75c to 3.00c
Pittsburgh	3.00c
Portland	3.10c
San Francisco	3.30c
Seattle	3.35c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.80c to 4.16c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.00c
Cleveland, 3/16-inch	3.225c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Ft. Worth	4.50c
Los Angeles	3.20c
New York (sheared and universal)	3.34c
New York (floor)	5.25c
Philadelphia	2.75c to 3.00c
Philadelphia, 3/16-inch	2.90c to 3.20c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.80c

NO. 10 BLUE ANNEALED SHEETS

Boston 3/16-inch	3.915c
Buffalo	3.80c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.15c
Detroit	3.65c
Los Angeles	3.75c
New York	3.89c
Portland	4.25c
Philadelphia	3.40c
San Francisco	3.90c
Seattle	4.25c
St. Louis	3.60c
St. Paul	3.75c
Tulsa	4.05c to 4.20c

NO 28 BLACK SHEETS

Boston	5.25c
Buffalo	4.45c
Chicago	4.20c
Cincinnati	4.55c
Cleveland	3.85c
Detroit	4.25c
Ft. Worth	5.50c
Los Angeles	4.75c
New York	4.60c
Philadelphia	4.50c
Portland	5.25c
San Francisco	4.90c
Seattle	5.25c
St. Louis	4.60c
St. Paul	4.35c
Tulsa	5.00c

NO. 28 GALVANIZED SHEETS

Boston	6.25c
Buffalo	5.60c
Chicago	5.30c
Cincinnati	5.65c
Cleveland	5.00c
Detroit	5.50c
Ft. Worth	6.00c
Los Angeles (corr. 28 ga.)	6.00c
New York	5.60c
Philadelphia	5.70c
Portland	6.25c
San Francisco	6.00c
Seattle	6.25c
St. Louis	5.70c
St. Paul	5.60c
Tulsa	6.00c to 6.31c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.65c
Detroit	3.80c
Ft. Worth	4.40c
Los Angeles	4.05c
New York	3.99c
Philadelphia	3.75c to 3.90c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.15c
Seattle	4.25c
St. Paul	3.90c
Tulsa	4.71c

HOOPS

Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cleveland	3.65c
Detroit	4.30c
New York	4.49c
Philadelphia	4.00c to 4.25c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds and hexagons	Flats and squares
Boston	4.05c	4.55c
Buffalo	3.90c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.90c	4.40c
Detroit	3.85c	4.35c
Los Angeles	5.25c*	.....
New York	4.00c	4.50c
Philadelphia	4.00c	4.50c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	.....
San Francisco	4.25c*	.....
Seattle	5.00c*	.....
St. Paul	3.85c	.....
Tulsa	4.66c	5.16c

*Rounds only.

COLD ROLLED STRIP

Boston, 0.100 inch, 500 lbs. lots	6.15 to 6.30c
Buffalo	6.35c
Chicago	6.25c
Cincinnati	7.15c
Cleveland, over 500 lb. lots	5.95c
Detroit	6.20c
New York	6.25c
Philadelphia	6.25c
Pittsburgh	6.30c

FOREIGN IRON AND STEEL

New York duty paid

Swedish, hollow drill steel	15.00c
Swedish iron bars round	6.75c
Flats and squares	7.00c

WELDED PIPE

Discounts from warehouse, New York City Standard Steel Pipe

WROUGHT STEEL PIPE

	Black	Galvanized
⅛-inch butt	—28	+21
¼ to ⅜-inch butt	—36	— 3
½-inch butt	—46	—29
¾-inch butt	—51	—37
1 to 3-inch butt	—53	—39
2-inch lap	—40	—22
2½ to 6-inch lap	—48	—35
7 and 8-inch lap	—44	—17
9 and 10-inch lap	—38	—14
11 and 12-inch lap	—37	—12

WROUGHT IRON PIPE

	Black	Galvanized
⅛ to ⅜-inch butt	+44%	+78%
½-inch butt	— 4	+19
¾-inch butt	—1	+ 9
1 to 1½-inch butt	—14	+ 6
2-inch lap	— 6	+14
2½-inch lap	— 9	+ 6
3 to 6-inch lap	— 3	+ 6
7 to 12-inch lap	— 8	+16

Coast Trade Is Small

Considerable Activity but No Large Lots—
Prices Continue Firm

SAN FRANCISCO, Calif., Sept. 3.—(*By Air Mail*)—Trading in iron and steel products during the past week was confined to relatively small tonnages with few exceptions. Practically all producers of sheets are now quoting on the new gage base but out-of-stock distributors have not yet adjusted their schedules to conform with the new differentials. Prices in most lines are firm.

Pig Iron and Coke

Foundry operations are by no means heavy. Due to keen competition in the jobbing line most foundries are working on limited business. The situation is better among those shops doing specialty work. During the past week about 200 tons of India iron arrived in port. Sales and inquiries have involved small lots only. The Southern Pacific Co., San Francisco, is opening bids this week for 400 tons of foundry coke. Prices are unchanged.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah Foundry	25.00 to 26.00
*English (2.75 to 3.25 sil.)	25.00
*German	24.25
*Belgian	22.00
*Indian	25.00
*Dutch	22.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Demand for mild steel bars is confined to small lots for immediate shipment. Awards of concrete bars this week aggregated over 650 tons and included 381 tons for a viaduct in Los Angeles and 150 tons for a bridge at Delta, Calif. Pending business is of fair proportions. Bids were opened this week on 450 tons for a dam at Fairfield, Mont., and bids will be opened Sept. 15 for 400 tons at Cotulla, Texas. Prices on foreign material have advanced and merchant steel is now being quoted at 1.75c to 1.80c c.i.f. duty paid, while concrete bars range from 1.95c to 2.00c.

Prices on plates now appear firm at 2.30c c.i.f. as the minimum. Awards during the week totaled 750 tons. The Shell Oil Co. placed one 80,000-barrel tank, involving 300 tons, with the Lacy Mfg. Co. and the Llewellyn Iron Works secured one 80,000-barrel tank, calling for 300 tons, for the same company. Gerrick & Gerrick, Seattle, were awarded a standpipe at Tacoma involving 150 tons. Interest this week is centered on the inquiry of the Southern California Edison Co., Los Angeles, for syphons for their Big Creek plant calling for 7000 tons of ⅜ to 1-inch material. No action has yet been taken by the Southern Pacific Co. on its inquiry for 4500 tons for new ferryboats. Pending business exceeds 12,000 tons.

Only two structural shape awards were reported this week. Schraders Iron Works booked 200 tons for a theater in Sacramento and 700 tons for a bridge at Brewster, Wash., was placed with an unnamed fabricator. Pending business involves over 10,000 tons. New inquiries include 425 tons for a theater in Hollywood, 320 tons for an office building at Tucson, Ariz., 750 tons for a hospital in San Francisco and 150 tons for an apartment house in San Francisco. Prices on domestic material are firm at 2.35c c.i.f. Foreign shapes are quoted at 1.65c to 1.70c c.i.f. duty paid.

Other Finished Material

Awards of cast iron pipe this week totaled about 500 tons. B. Nicoll & Co. secured two lots for Seattle involving 456 tons. Bids were opened this week by San Francisco for improvement work involving 485 tons. The material for this project was purchased by the city over a year ago. Pending business aggregates 1500 tons. The Standard Oil Co., San Francisco, purchased 200 tons of line pipe. Bids were opened this week for 20,000 feet of 2-inch standard pipe for the Hetch Hetchy project, San Francisco. One of the nonconference lines has quoted 17c per hundred pounds on pipe in lots of 1000 tons and several San Francisco jobbers are considering pooling their shipments to obtain this rate.

Practically all producers of sheets are now quoting on the new gage base and the two local producers, it is reported, will adjust their prices accordingly. Movement is by no means heavy, most consumers continuing their policy of buying in small lots from time to time. Prices are firm at 3.00c base Pittsburgh on black sheets and 3.85c base Pittsburgh on No. 24 gage galvanized sheets.

Movement of out-of-stock material during the past month showed little improvement over sales for July. All lines are moving about on a parity. San Francisco jobbers are meeting this week to adjust their schedules to conform with the new gage on black and galvanized sheets. Prices on other out-of-stock material continue unchanged.

Insurance Plan Provides Nurse Service

New York, Sept. 7.—The Caldwell Foundry & Machine Co., Birmingham, Ala., has adopted a co-operative group insurance program, that in addition to the protection offered, provides the advantages of a visiting nurse service. The life insurance established exceeds $100,000. In addition, liberal weekly benefits are provided under the health and nonoccupational accident policy which is included in the plan. Underwritten by the Metropolitan Life Insurance Company, a feature of the plan is the co-operative arrangement of paying the premiums by employer and employes jointly.

Pipe Schedule

Conforming To Simplified Plan Adopted by National Tube Co.

The National Tube Co. as of Sept. 1 discontinued the manufacture, as a regular stock item, of any size pipe which does not conform to the simplified practice schedule adopted by various pipemakers following a study by the department of commerce at Washington. The term 'standard merchant pipe' has been dropped in favor of 'standard weight pipe.' Herewith are the dimensions, sizes and weights put into effect Sept. 1 on new production and scheduled to become effective next Jan. 1 on existing stocks.

Standard Pipe Sizes Effective Sept. 1

STANDARD PIPE SIZES EFFECTIVE SEPT 1

Size, (Nominal inside diameter) inches	Standard Weight: Outside diameter inches	Standard Weight: Approximate thickness inches	Standard Weight: Weight per foot† Plain ends	Standard Weight: Weight per foot† Threads and couplings	Extra Strong: Outside diameter inches	Extra Strong: Approximate thickness inches	Double Extra Strong: Outside diameter inches	Double Extra Strong: Approximate thickness inches
⅛	0.405	0.068	0.244	0.245	0.405	0.095	.....	.....
¼	0.540	0.088	0.424	0.425	0.540	0.119	.....	.....
⅜	0.675	0.091	0.567	0.568	0.675	0.126	.....	.....
½	0.840	0.109	0.850	0.852	0.840	0.147	0.840	0.294
¾	1.050	0.113	1.130	1.134	1.050	0.154	1.050	0.308
1	1.315	0.133	1.678	1.684	1.315	0.179	1.315	0.358
1¼	1.660	0.140	2.272	2.281	1.660	0.191	1.660	0.382
1½	1.900	0.145	2.717	2.731	1.900	0.200	1.900	0.400
2	2.375	0.154	3.652	3.678	2.375	0.218	2.375	0.436
2½	2.875	0.203	5.793	5.819	2.875	0.276	2.875	0.552
3	3.500	0.216	7.575	7.616	3.500	0.300	3.500	0.600
3½	4.000	0.226	9.109	9.202	4.000	0.318	4.000	0.636
4	4.500	0.237	10.790	10.889	4.500	0.337	4.500	0.674
5	5.563	0.258	14.617	14.810	5.563	0.375	5.563	0.750
6	6.625	0.280	18.974	19.185	6.625	0.432	6.625	0.864
8	8.625	0.322*	28.554	28.809	8.625	0.500	8.625	0.875
10	10.750	0.365*	40.483	41.132	10.750	8.500	.....	.....
12	12.750	0.375*	49.562	50.706	12.750	0.500	.....	.....

*These thicknesses correspond to the heaviest weights made of these sizes. Lighter weights—namely: 8"-25 lb., 10"-32 lb., 10"-35 lb., and 12"-45 lb., can be furnished as heretofore when specified.

†Column of weights added by National Tube Company for convenience and comparison.

Urging Review of Gulf Ports Rate Decision

Washington, Sept. 7.—Kansas City iron and steel interests have filed a petition for review of the record in connection with the interstate commerce commission's decision on import iron and steel rates from Gulf ports. The request is based on the following grounds:

1. That the conclusions are against and contrary to the evidence and are founded on matters outside of the record.
2. That the decision works an unjust and unlawful discrimnation and prejudice against Kansas City iron and steel interests, and other domestic steel manufacturers.

The petitoners ask that the commission give the matter consideration before Sept. 19, at which time the order of the commission becomes effective and that it "set aside and annul those parts of the report and order dealing with the question of rates on import traffic from Texas Gulf ports, as being contrary to the law and evidence, and will permit the suspended schedules to take effect in order to remove an unjustly discriminatory and unlawfully prejudicial situation."

China Furnishes Growing Machinery Market

Total imports of industrial machinery into China during 1924, the latest for which statistics are available, amounted to $18,672,000, as compared with $21,904,000 and $41,387,000 for 1923 and 1922, respectively. While such a comparison with the years immediately preceding may seem unfavorable, a study of this trade in connection with that of prewar years reveals facts which are most encouraging.

The 1924 machinery import trade represents four times the average yearly value for the years 1910 to 1913, inclusive, which amounted to only $4,664,000. In view of the political disturbances that China has been experiencing, this showing is a tribute to the remarkable trade vitality of that country, and argues well for renewed activity when conditions become more favorable. This trade expansion is indicative also of the growing industrialization of China, which now is keeping step with the growth of other Asiatic countries.

Standings of the principal suppliers of this market prior to the World war, as indicated by the average percentages shown during the period 1910-1913, were as follows: Great Britain, 37.9 per cent; Germany, 18.3 per cent; Japan, 8.9 per cent; United States, 6.8 per cent. The relative participation in the trade of 1924 gives the following order; Great Britain, 29.6 per cent; United States and Canada, 20.8 per cent; Japan, 18.8 per cent; Germany, 17.0 per cent.

Employment Shows Slight Drop for July

Washington, Sept. 7.—July employment figures for 207 iron, steel and allied industries totaled 279,678, compared with 284,171 in June, a decrease of 1.6 per cent. The payrolls in these plants decreased 6 per cent from $8,674,934 in June to $8,156,891 in July.

The bureau of labor statistics also received data from 149 structural ironwork plants which reported their employment in June at 24,143 increasing in July to 25,418, a gain of 5.3 per cent. Their payrolls decreased from $710,678 in June to $709,052 in July.

Fifty cast iron pipe plants reported their employment in June at 14,411, increasing in July to 14,891, or 3.3 per cent, while their payrolls increased from $352,175 in June to $356,671 in July.

Reports were received from 162 machine tool plants which gave their employment in June at 31,394 decreasing in July to 31,342. Payrolls in the plants decreased from $959,266 in June to $937,682 in July.

The bureau also received reports from 980 foundry and machine shop product factories which gave their employment in July at 247,900.

Warehouse Demand Good

(*Concluded from Page* 675)

black sheets the new price is 4.25c base, delivered locally, for No. 24 gage. This figures out to 4.50c for No. 28 gage; the old base price was 4.35c and No. 28 gage, making the new price $3 higher on No. 28 gage than the old. On galvanized sheets the new price is 5.20c base for No. 24 gage. Taking No. 16 gage as a typical example of the heavier gages, the present price is 4.70c, where as under the former extras, the old price was 4.80c. It is estimated that warehouse business at Philadelphia in August was about 5 to 10 per cent above the July total.

New York, Philadelphia and Chicago warehouses are now quoting black and galvanized sheets on the new No. 24 gage base and have made effective the new differentials adopted by the mills. Warehouses in other cities are expected to follow. September opens with business substantially on the same basis as August. Prices generally are unchanged, with the exception of the advances occasioned by the new sheet basis.

Pig Iron Is Now Active

(*Concluded from Page* 663)

on its inquiry for 2000 tons for fourth quarter for its Cleveland plant, dividing the order between two Cleveland producers. Valley furnaces that quoted $17.50, base, valley, lost the business, although the Cleveland interests are reported to have quoted $19, base, or $19.50, delivered, against $19.26, delivered from the valley. Various grades and considerations were involved. This was the largest order placed for local delivery in a month. Several inquiries for 1000 and 1500-ton lots from Ohio and Indiana melters are pending, the total approximating 6000 tons. Lake furnaces prices are firm.

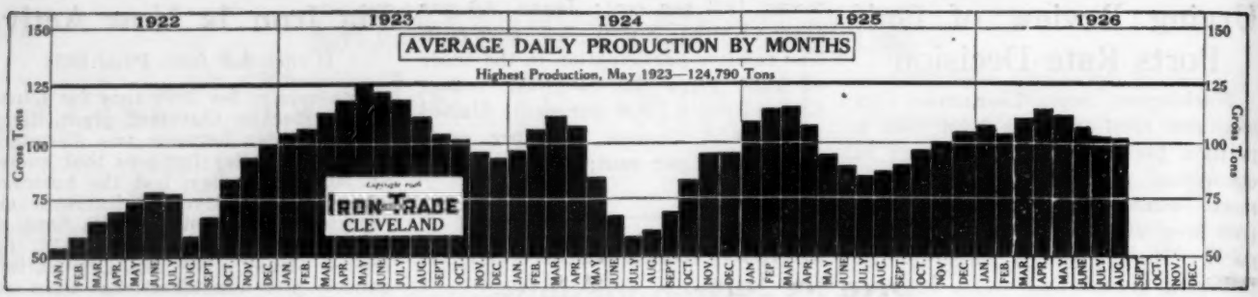
Cincinnati, Sept. 7.—Pig iron sales in the past week aggregated several thousands tons. The Canton Malleable Co., bought 1000 tons of malleable while the Anderson Stove Co., Anderson, Ind., closed for 300 to 500 tons of northern foundry. The Monitor Furnace Co., Cincinnati, is reported to have bought several hundred tons of northern foundry, while the Henry Vogt Mfg. Co., Louisville, is in the market for approximately 1800 and the International Harvester Co., for 1000 tons of the same grade for its Springfield, O. plant. The price situation is strong, with northern foundry at $20 Ironton. Southern iron is unchanged at $21, Birmingham.

Chicago, Sept. 7.—Additional fourth quarter contracts for northern iron have been closed in the past several days. Spot buying activity is less important. September shipments are opening at a rate that may exceed August shipments, which were nearly 20 per cent ahead of those for July. Specialty foundries and those having automotive and farm implement accounts are active, but jobbing foundries have less work in sight. No indication is seen that buyers are inclined to build up stocks. Some first quarter inquiry appears from some foundries having castings contracts to cover. The price of $21, Chicago furnaces, for No. 2 foundry and malleable continues firm.

St. Louis, Sept. 7.—While buying of pig iron is slightly more active than ten days or two weeks ago, the market still is quiet. Sales during the past week totaled approximately 2200 tons of which the St. Louis Coke & Iron Corp. booked 1500 tons. Prices are firm. For northern and southern iron the best that can be done by buyers is $21, furnace. The leading local producer is asking $22 to $22.50, f.o.b. Granite City.

Birmingham, Ala., Sept. 7.—New pig iron business has shown no improvement recently, sales being small. However, deliveries are steady, and with the spot orders prevent any addition to the surplus stocks at furnaces. Prices are unchanged. Fourteen furnaces continue on foundry iron.

As all early blast furnaces were blown by water power and as the water failed during summer, the stacks seldom produced more than 500 tons annually.



Pig Iron Decline Nearly Halted

FINAL figures just compiled show production of coke pig iron in August to be but slightly less than the output of July, indicating the decline which started last May has about come to a conclusion. Operating stacks on the last day of the month were only two less than at the close of the previous month and with preparations being made to place in blast several furnaces during the early part of this month, production probably is about to commence the upward swing.

Complete reports indicate production during August to have been 3,200,723 gross tons, which compared with the 3,224,663 tons of the preceding month, was a loss of 23,940 tons. On an average daily basis, this represented a rate of 103,249 tons for August and 104,021 tons for July, the decrease being 772 tons per day, or only 0.74 per cent. Production was the best for any August since 1923 when the rate was 111,254 tons per day.

MONTHLY PRODUCTION

	1926	1925	1924
January	3,319,789	3,372,207	3,015,489
February	2,923,850	3,214,067	3,073,619
March	3,458,171	3,571,422	3,465,389
April	3,438,805	3,211,235	3,226,107
May	3,477,820	2,933,907	2,619,986
June	3,232,478	2,679,045	2,022,836
Total 1st half	19,850,913	18,981,883	17,423,417
July	3,224,663	2,665,262	1,783,457
August	3,200,723	2,707,171	1,882,986
September		2,725,885	2,053,617
October		3,017,889	2,461,727
November		3,023,257	2,154,979
December		3,249,057	2,956,389
Total 2nd half	6,425,386	17,388,521	13,653,155
Grand total	26,276,299	36,370,404	31,076,572

Active Blast Furnaces

	In blast	Total	Per Cent
August	215	372	57.8
July	217	372	58.4
June	220	372	59.1
May	229	376	60.9
April	237	376	63.0
March	235	377	62.4

AVERAGE DAILY PRODUCTION

	1926	1925	1924	1923	1922
Jan.	107,089	108,781	97,273	104,136	53,090
Feb.	104,423	114,788	105,987	106,925	58,220
Mar.	111,554	115,207	111,787	113,664	65,674
Apr.	114,627	107,041	107,537	118,210	69,005
May	112,187	94,642	84,515	124,790	74,495
June	107,749	89,301	67,427	122,262	78,748
July	104,021	85,976	57,531	118,860	77,517
Aug.	103,249	87,328	60,741	111,254	58,408
Sept.		90,862	68,454	103,917	67,466
Oct.		97,351	79,419	101,375	84,827
Nov.		100,775	83,832	96,373	94,870
Dec.		104,808	95,367	93,952	99,468
Ave.	108,132	99,645	84,908	109,659	73,563

Furnaces operating on the last day of the month totaled 215, against 217 on July 31. With 372 serviceable furnaces in the country, this represented an activity of 57.8 per cent in August and 58.4 per cent in July. During the month, 5 merchant stacks were blown in and 4 blown out. Of the nonmerchant or steelworks class, 2 were blown in and 5 blown out. On Aug. 31, active merchant furnaces totaled 57 and nonmerchant 158. The corresponding figures for July were 56 and 151. On Aug. 31 the Steel corporation was operating 82 furnaces.

Stacks blown in during August were: In Ohio: Dover, M. A. Hanna Co. In Pennsylvania: One Lucy, Carnegie Steel Co.; one Eliza, Jones & Laughlin Steel Corp.; Palmerton No. 2, New Jersey Zinc Co. In New York: Buffalo B., M. A. Hanna Co.; Genesee, McKinney Steel Co. In Alabama: North Birmingham, No. 4, Sloss-Sheffield Steel & Iron Co.

Stacks blown out during the month were: In Ohio: Central B, American Steel & Wire Co. In Pennsylvania: One Isabella, Carnegie Steel Co.; Bethlehem D, Bethlehem Steel Co.; Palmerton No. 1, New Jersey Zinc Co. In New York: Donner No. 2, Donner Steel Co. In Alabama: North Birmingham No. 3, Sloss-Sheffield Steel & Iron Co.; Alabama City, Gulf States Steel Co. In Indiana: Gary No. 9. Illinois Steel Co. In Wisconsin: Mayville B, Illinois Steel Co.

DIVISIONS OF PRODUCTION

1925	Merchant	Non-merchant	Spiegel	Ferro-manganese	Other ferro
Jan.	659,256	2,712,951	5,418	23,564	956
Feb.	661,415	2,552,652	4,910	19,796	848
Mar.	736,284	2,835,138	5,449	24,422	877
April	689,162	2,522,073	5,341	21,448	799
May	605,347	2,328,560	5,294	22,717	298
June	563,782	2,115,263	4,972	19,834	.....
July	609,741	2,055,521	5,074	16,614	.....
Aug.	588,330	2,118,841	4,940	18,818	.....
Sept.	569,219	2,156,666	5,162	18,381	140
Oct.	606,092	2,411,797	5,071	21,472	1,544
Nov.	638,214	2,385,043	6,370	27,202	1,665
Dec.	664,681	2,584,376	7,746	25,881	1,883
Total	7,591,523	28,778,881	65,747	260,149	9,010
1926					
Jan.	724,946	2,594,843	7,746	32,924	1,607
Feb.	622,121	2,301,729	7,084	22,309	1,464
March	733,321	2,724,850	7,339	24,064	1,942
April	779,310	2,659,495	7,051	24,134	1,593
May	797,539	2,680,281	6,990	22,979	1,704
June	734,823	2,497,655	5,864	25,378	.....
July	758,166	2,466,497	3,699	26,873	.....
Aug.	682,017	2,518,706	4,372	23,557	.....

AUGUST PIG IRON

	No. of stacks	No. in blast last day of month Aug.	July	Total tonnage made Merchant	Nonmerchant	—Totals— August	July
Ohio	69	50	50	149,161	640,292	789,453	793,428
Pennsylvania	132	74	74	129,869	932,357	1,062,226	1,027,283
Alabama	34	23	24	117,479	121,465	238,944	243,851
Virginia	17	2	2	7,426	.....	7,426	7,781
New York	26	16	15	86,704	109,925	196,629	206,634
New Jersey	3	0	0	.....	.....	.....	.....
Illinois	25	16	16	98,980	218,221	317,201	322,524
Colorado	5	2	2				
Indiana	18	15	16	40,229	399,555	439,784	468,561
Maryland	6	5	5				
Wisconsin	5	2	3				
Kentucky	5	1	1				
Tennessee	13	1	1	11,313	47,983	59,296	58,714
Utah	1	1	1				
West Virginia	4	2	2				
Michigan	4	3	3				
Minnesota	3	2	2	32,210	29,625	61,835	65,315
Missouri	1	0	0				
Texas	1	0	0				
Spiegel and ferro—all states	....	....	....	8,646	19,283	27,929	30,572
Totals	372	215	217	682,017	2,518,706	3,200,723	3,224,663

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

HIGBY-REYNOLDS SILICA CO., Columbus, O., has been organized to take over the business of the Higby Canyon Sand Co. and the E. J. Reynolds Sand Co., both being producers of silica sand in the Ottawa-Utica district in Illinois. Separate equipment will be maintained in the various sand strata to avoid mixing grades. The combined output of the two companies will be 65 cars a day. By blending a large variety of sands for various uses is produced. T. V. Taylor, Columbus, O., is president; A. S. Hindman, 749 Railway Exchange building, Chicago, is vice president; H. C. Cary, Utica, Ill., vice president; C. J. Niesen, Utica, Ill., secretary and E. E. Weaver, Ottawa, Ill., general manager.

* * *

YOUNGSTOWN, PRESSED STEEL CO., Warrren, O., has installed a machine with capacity of producing a carload of metal lath per day. It is the fifth machine of its kind added in six years by this company.

* * *

BAY CITY ELECTRIC STEEL CASTINGS CO., Bay City, Mich., has completed an addition to its plant, increasing factory space 2000 square feet and office space 600 square feet.

* * *

CONSTRUCTION is progressing on the plant of the Ohio Edison Co., Springfield, O., which will have an initial capacity of 20,000 kilowatts and an ultimate capacity of 100,000 kilowatts. It will supply industrial power for a wide area about Springfield. A large turbine and two 1275-horsepower boilers will be installed.

* * *

CENTRAL BRASS MFG. CO. and Paragon Brass Mfg. Co., both of Cleveland, have been merged under the name of the former. The plant of the Central company, 2950 East Fifty-fifth street, is being added to and production will be consolidated there. Products of the two companies were complementary and all will be continued. E. A. Eckhouse is president.

* * *

RELIANCE ELECTRIC & ENGINEERING CO., Cleveland, has awarded a contract to the Austin Co. for an addition to its plant, 40 x 80 feet, two stories, equipped with 3-ton traveling cranes. This is the fifth plant extension by this company in 14 years. Clarence L. Collens is president and C. V. Putnam secretary. The company manufacturers d. c. motors from 1 to 250 horsepower and polyphase induction motors from 1 to 60 horsepower.

* * *

PENNSYLVANIA CASTING & MACHINE WORKS, Pittsburgh, formerly the Monongahela Casting Co., has sold to the American Brake Shoe & Foundry Co. 76,151 square feet with brick iron-clad and frame factory buildings, equipment, etc., on Preble avenue.

* * *

PROVIDENT MACHINE CO., Victory building, Philadelphia, manufacturer of brake lining machinery, has bought the plant and business of the Breeze Metal Hose & Mfg. Co., 22 South Sixth street, Newark, N. J. Offices and manufacturing operations of the combined companies will be consolidated at Newark. Joseph J. Mascuch is president of the new company, John T. Muscuch vice president and L. P. Laplanch secretary. Coleman S. O'Laughlin, formerly president of the Breeze company, will be connected with the consolidation.

* * *

NIAGARA FALLS SMELTING & REFINING CORP., Buffalo, has placed contracts for three new buildings; one warehouse 55 x 60 feet, laboratory building 22 x 51 feet, repair department building 34 x 46 feet. Bids on an addition, 60 x 65 feet, to its smelting building are being called for. Three new furnaces have been purchased and five more are being figured on. One electric crane has been installed and two more are required. In addition the firm has installed 1200 feet of overhead track for conveying materials. Other additional equipment will be placed as fast as construction of buildings will permit.

* * *

AUBURN AUTOMOBILE., CO., Auburn, Ind., will build its six-cylinder automobiles at Connersville, Ind., according to an announcement of E. L. Cord, president and general manager. The four and eight cylinder cars will be made in Auburn. According to Mr. Cord, the company has outgrown its facilities in Auburn. The executive offices will be continued in Auburn. The company has started work on a new $50,000 storage plant in Auburn and next year a building for the service department will be built there. It is announced also that within the next two months the company will be in production on taxi cabs.

* * *

BRIDGE & BEACH MFG. CO. and the Buck Stove & Range Co. have merged under the name of the St. Louis Stove & Furnace Co. The capitalization of the combination has not been made public in terms of dollars. It is announced, however, that 11,000 shares of preferred and 20,000 shares of common stock will be issued. The Buck company was capitalized at $1,500,000 and the Bridge & Beach Co. at $1,000,000. Bridge & Beach was established in 1837 by Hudson E. Bridge Sr., and Bucks was founded 9 years later by Charles Buck and Wiley Wright.

Lee W. Vancleve, president of Buck's since 1915, will be president of the St. Louis Range & Furnace Co., and L. H. Booch, president of Bridge & Beach, will be vice president. It was stated that neither customers, employes nor products of the original companies will be affected by the consolidation. The plants will continue to manufacture their products as heretofore and market them under the old trade names.

Bad Order Cars Gain

Washington, Sept. 7.—Freight cars in need of repair Aug. 15 totaled 169,765 or 7.4 per cent of the number on line, according to reports filed today by carriers with the car service division of the American Railway association. This was an increase of 4009 cars over the number reported Aug. 1, when there were 165,756 or 7.2 per cent. It was, however, a decrease of 25,506 cars compared with the same date last year. Freight cars in need of heavy repairs Aug. 15, totaled 126,983 or 5.5 per cent, an increase of 817 cars compared with Aug. 1 while freight cars in need of light repair totaled 42,782, an increase of 3192 compared with Aug. 1.

Steel Institute Meets in Sweden

British Metallurgists Are Guests of the Jernkontoret—How Use of Waterpower and Charcoal Have Aided Production, Described—American Presents Paper on Steel Treatment

ADDITIONAL interest was lent to the summer meeting of the British Iron and Steel institute by the fact that it was held at Stockholm, Sweden, by the invitation of the board of directors of Jernkontoret, or Association of Swedish Iron Masters. The sessions, which were presided over by Sir W. Peter Rylands, managing director of Rylands Bros. Ltd., wire and wire rope manufacturers, Warrington, and Jonas Carlsson Kjellberg, president of Jernkontoret, were held at the Palace of the Nobility, Aug. 27 and 28. On the last day of the meeting works and mines in central Sweden were visited.

The leading paper, by Arvid Johansson and Axel Wahlberg, Stockholm, was entitled "The Development of the Swedish Iron Industry During the Last Thirty Years." For a long time, owing to the purity of the Swedish ores, to the presence of great forests and an abundance of waterpower, Sweden was the greatest iron producing country in the world, and in the two decades 1720 to 1740 Sweden's iron production was twice as large as that of England. This condition changed at the end of the eighteenth century when new processes of manufacture permitted of the use of ores containing a considerable amount of phosphorous. Later on, the methods of manufacture of steel by the bessemer and the open-hearth processes proved helpful to the Swedish industry in producing high-grade steel.

The Swedish iron industry is mainly based on the ores of central Sweden which are very low in phosphorous and sulphur. The low grade ore which of necessity accumulates at the mines is concentrated and agglomerated and can then be used in the blast furnace.

For an average year with normal water supply, the amount of waterpower available is 32,500,000,000 kilowatt-hours, but in 1923 only 2,980,000,000 were produced. In 1917 there was formed a power company for the supply of power to, and co-operation with, a number of power consumers and producers, which supplies the power to 12 ironworks, and eight mines. This plan has met with success.

The output of wrought iron, which during the nineteenth century formed an important branch of the Swedish iron industry, has declined considerably during the last decades, notwithstanding the adoption of certain technical improvements which apply to the manufacture of Lancashire iron. The Swedish Lancashire iron still maintains its reputation as the purest and softest iron, unsurpassable in welding qualities, softness and ductility. For ordinary forging purposes it has been obliged to yield place to the soft open-hearth steel. Lancashire iron still enjoys a good demand for the manufacture of steel tubes; tubes made of this material have a stronger resistance to corrosion.

Basic Process Used

The development of steelmaking in Sweden during the last 25 years is marked by the decline in the bessemer process, whereas the open-hearth process has largely expanded and electric steelmaking has come into use to some extent. The open-hearth process was introduced in Sweden about ten years after G. F. Goransson in 1858 had technically solved the bessemer process. Most works in Sweden have adopted the basic process, partly because the demand was chiefly for soft steel, partly because it permitted the use of scrap bought in the open market. The tendency for large furnaces has not been in the same degree as abroad. For furnaces with acid linings 15 tons is the maximum, and for basic furnaces producing high-class steel 15 tons is rarely exceeded, while for cheaper material the limit of 25 tons is chosen solely for the ease of manipulation. Where quality steel is produced a cold charge is always used, which makes it possible to sort carefully the pig iron and scrap suitable for the different kinds of steel made. The charge is tapped when the desired carbon has been reached. Recarburization is not used. Additions of ferromanganese, etc., are always made in the furnace, except for cheap steel, when the ferro may be added in the ladle. Exceptional precautions are taken to obtain sound ingots without surface defects in the manufacture of high-carbon steel.

The production of electric steel has never attained importance in Sweden. The production of ferroalloys in electric furnaces is relatively extensive. Considerable researches have been made in Sweden toward obtaining iron or steel by direct process. The problem of producing a pure iron sponge from fine concentrates was solved at Hoganas about 15 years ago. A modern method is the Wiberg method, which, at the expense of Jernkontoret, is now being tried on a small scale at Sandviken. In this method, lump ore is reduced by carbon monoxide gas. Another method proposed by Flodin is to produce fluid steel in an electric furnace, using briquettes made from an intimate mixture of iron ore concentrates, charcoal powder, and lime. Experiments have been made at Hagfors in a small furnace, and are now being conducted in a large furnace on a commercial scale.

Statistics were given showing the production and exports of Swedish iron and steel as far back as 1823. In 1925, Sweden produced 431,988 metric tons of pig iron with an average of 75 furnaces blowing throughout the year. The production of steel ingots was 475,100. The exports of iron and steel in 1925 were 165,574 tons.

Frank Adcock, of the National Physical Laboratory, Teddington, England, presented a paper on "The Effect of Nitrogen on Chromium and some Iron-Chromium Alloys" showing that nitrogen is rapidly absorbed by chromium in the liquid state, and that alloys of iron and chromium, both in the liquid and solid state take up nitrogen at high temperatures. A paper on "Physical Investigation into the Cause of Temper-Brittleness" by Prof. J. T. Andrew and H. A. Dickie, of the Royal Technical College, Glasgow, shows that variations, depending on the rate of cooling from the tempering temperature, are produced in the specific volume and brinell hardness of various steels in their tough and brittle states. G. F. Comstock, of Niagara Falls, presented a paper on "The Treatment of Steel with Ferro-Carbon-Titanium." In his conclusion, the author emphasizes the fact that ferrotitanium is not claimed to be anything wonderful or mysterious. It is a good deoxidizer, more powerful qualitatively than silicon, and one that does not make steel dirty when it is used.

"The Mechanical Properties of Four Heat-Treated Spring Steels" was the title of the contribution by G. A. Hankins, D. Hanson and Miss G. W. Ford, of the National Physical Laboratory.

British Orders Are Piling Up

More Blast Furnaces Than Ever Before Will Have To Be Operated After the Coal Strike—Domestic Steel Demand Also Heavy—Germans Increasing Exports of Semifinished and Sheets

2-3 Caxton House, Westminster, S. W.1
European Headquarters,
IRON TRADE REVIEW,

LONDON, Sept. 7.—(*By Cable*)—Refusal by the coal mine owners to negotiate on a national basis for a settlement of the strike is delaying an agreement. In the meantime, coal is more plentiful due to the resumption of mining in some localities, and to exports. The outlook for the iron and steel industry after the strike is promising, as order books are well filled. Demand for pig iron will necessitate operation of more blast furnaces than ever before. Exports of pig iron from the Middlesbrough district in August were far below normal, with 4243 tons reported.

Domestic steel orders are piling up. The Brown Bayley's Steelworks, Ltd., Sheffield, has resumed operating a 25-ton furnace. Other steelworks are preparing to increase output. Substantial orders for railway equipment for India have been booked at Sheffield. Inquiries from South America are promising. The market for galvanized sheets is easier due to improved production; demand for tin plate is quiet.

The French export market is firm; a decrease is reported in domestic orders. The market in Belgium also is strong, many makers being out of the market. It is reported that an iron and steel works in the Charleroi district has failed. Exports of German semifinished steel and sheets are substantial, due to the British strike.

England Finds Steel Supply Difficult To Buy

LONDON, Aug. 20.—(*European Staff Service*)—British manufacturers are obtaining larger supplies of foreign coal, but it is increasingly difficult to obtain supplies of continental steel. Continental prices have been advanced and deliveries are seriously delayed. Some continental producers are disinclined to accept orders, others still accept business but cannot promise delivery before next fall.

The pig iron situation in Great Britain is serious. Stocks of domestic material are rapidly dwindling and foreign pig iron delivered in consuming districts is at a price which many works and foundries cannot afford to pay. Foreign foundry pig iron of good quality can be delivered in the Midlands at £4 15s ($23). On the other hand, Middlesbrough pig iron cannot be had in the Midlands under £5 5s ($25.45), and only those who are urgently in need are willing to pay the price.

Naturally, British exports of pig iron are low and they only correspond to old contracts, but it is interesting to note that imports are, on the average, lower than last year. For the first seven months of this year imports of pig iron in Great Britain totaled 143,246 tons, against 169,516 tons in the corresponding period of last year.

This explains some of the complaints of continental producers that British purchases of pig iron have not materially increased through the coal stoppage. July imports, however, reached the comparatively high figure of 19,555 tons. Ore imports have practically stopped. The British demand for continental semifinished steel is considerable; the London representative of a leading continental export firm stated that if they had twice the number of plants they could not supply the demand.

In Germany the effects of the

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Sept. 6	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$22.11	4 11 0*	$17.25	3 11 0	$17.25	3 11 0	$17.50	3 12 0
Basic	21.87	4 10 0	18.83	3 17 6	18.83	3 17 6	17.01	3 10 0
Basic-bessemer	21.26	4 7 6†	15.55	3 4 0	15.55	3 4 0	18.23	3 15 0
Hematite, Phosphorus 0.02-0.05	20.17	4 3 0	21.46	730*	.....	.....	20.66	4 5 0
SEMIFINISHED STEEL								
Billets	$30.38	6 5 0	$23.09	4 15 0	$23.09	4 15 0	$20.66	4 5 0
Wire rods	43.74	9 0 0	26.73	5 10 0	26.73	5 10 0	29.16	6 0 0
FINISHED STEEL								
Standard rails	$36.46	7 10 0	$29.16	6 0 0	$29.16	6 0 0	$29.16	6 0 0
Merchant bars	1.63c	7 10 0	1.12c	5 0 0	1.12c	5 0 0	1.10c	4 18 0
Structural shapes	1.41c	6 10 0	1.11c	4 19 0	1.11c	4 19 0	1.06c	4 15 0
Plates, ship, bridge and tank	1.55c	7 5 0	1.25c	5 12 0	1.25c	5 12 0	1.22c	5 9 0
Sheets, black, 24 gage	2.28c	10 10 0	2.35c	10 10 0	2.35c	10 10 0	2.52c	11 5 0
Sheets, galvanized, 24 gage, corrugated	3.58c	16 10 0	3.72c	2,800*	3.88c	3,100*	3.70c	16 10 0
Bands and strips	2.17c	10 0 0	1.46c	6 10 0	1.46c	6 10 0	1.46c	6 10 0
Plain wire, base	2.12c	9 15 0	1.48c	6 12 6	1.34c	6 0 0	1.55c	6 18 0
Galvanized wire, base	2.77c	12 15 0	2.18c	9 15 0	1.79c	8 0 0	2.02c	9 0 0
Wire nails, base	2.06c	9 10 0	1.96c	8 15 0	1.60c	7 2 6	1.79c	8 0 0
Tin plate, base box 108 pounds	$ 4.98	1 0 6	.....	.....	.....	.....	$ 6.80	1 8 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$21.87	4 10 0	$17.64	600(2)	$16.90	610	$19.55	85
Basic pig iron	20.41	4 4 0	17.35	590(1)	16.62	600	20.24	88
Furnace coke	7.29	1 10 0	6.29	214	5.54	200	4.95	21.50
Billets	30.38	6 5 0	22.93	780	21.33	770	27.37	119
Standard rails	1.63c	7 10 0	1.20c	900	1.25c	1,000	1.46c	140
Merchant bars	1.74c	8 0 0	1.30c	975	1.19c	950	1.40c	134
Shapes	1.63c	7 10 0	1.26c	950	1.16c	925	1.37c	131
Plates, ship, bridge and tank	1.84c	8 10 0	1.50c	1,125	1.21c	970	1.55c	149
Sheets, black, 24 gage	2.39c	11 0 0	2.53c	1,900	2.25c	1,800	2.14c	205
Sheets, galvanized 24 gage, corrugated	3.69c	17 0 0	3.66c	2,750	3.88c	3,100	3.96c	380
Plain wire	2.11c	9 15 0	1.76c	1,325	1.75c	1,400	1.88c	180
Bands and Strips	2.28c	10 10 0	1.48c	1,110	1.50c	1,200	1.67c	160

*Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £1 10s 0d ($7.29) f. o. b. Ferromanganese £14 0s 0d ($68.04) f. o. b. German ferromanganese £13 10s 0d ($65.61) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semifinished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg and German are for basic-bessemer steel.

British coal stoppage are making themselves felt and good sales have been enjoyed, more especially in the shipplate department. Orders also are received for semifinished steel, which is an unusual line for German export business. This also applies to pig iron which generally is a minor factor in German exports, for a certain tonnage of pig iron shipped from north Germany sea ports is of Lorraine origin.

Japan Forms Syndicate

London, Aug. 31.—(*European Staff Service*)—The *Echo de la Bourse* of Brussels reports that a syndicate is being formed in Japan for the sales of iron and steel in the domestic market. The capital of the company would be 2,000,000 yen, half of which will be furnished by the producers, the other half being subscribed by the selling agencies. The number of shares allocated to each producer will be in proportion to the output of the works and the number of shares allocated to each selling agency will be in proportion to the turnover of the business. This company will handle the buying and selling of all products manufactured by its members and will dictate to each participant the quantity of the product which it is required to furnish. The participating producers will agree to sell their products exclusively to the company, except when it is to fulfill a government order.

Selling agencies will receive a commission on the sales but will not be authorized to import or sell metallurgical products other than those manufactured by the company.

Belgium Breaks Records

Brussels, Aug. 31.—(*European Staff Service*)—For the first time in its industrial history the monthly production of pig iron in Belgium has exceeded 300,000 tons, the figure for July being 306,590 metric tons, compared with 294,750 tons, which was the previous high mark, reached in May. The number of furnaces blowing July 31 was 55, two more than June 30. Production of steel ingots and castings in July was 295,910 metric tons, against 297,680 tons which was the highest mark, reached in the preceding month. The July figure included 289,020 tons of steel ingots and 6890 tons of steel castings. Output of finished steel for July also exceeded all previous records and reached 256,300 metric tons, against 256,240 tons, the previous high mark, attained in the preceding month.

Output of furnace coke also was the highest ever recorded and attained 453,300 metric tons. The following table gives figures for the first seven months of 1926, compared with the monthly averages of the three preceding years and 1913, in metric tons:

Monthly average	Coke	Pig iron	Steel ingots and castings	Finished steel
1913	293,585	207,055	205,550	154,820
1923	348,330	178,995	191,410	161,950
1924	346,650	234,000	238,380	198,115
1925	342,360	211,785	200,880	164,940
1926				
Jan.	321,220	137,790	116,180	106,260
Feb.	347,900	202,400	167,360	153,180
March	434,850	281,260	260,760	240,330
April	431,110	287,890	267,780	228,010
May	433,850	299,630	272,090	240,590
June	434,750	294,750	297,680	256,240
July	453,300	306,590	295,910	256,300

French Steel Prices Are Advancing

PARIS, Aug. 31.—(*European Staff Service*)—Negotiations pursued in Paris during the past few days between representatives of leading French, German, Belgian and Luxemburg iron and steel makers for the purpose of organizing a continental steel trust were interrupted Aug. 16 by the sudden departure of the German delegates. The object of the proposed combine was to control prices, output and distribution in export markets. The pact was on the point of conclusion when the Belgian ironmasters objected to their tonnage allotment, which in their opinion was less than their just portion considering the importance of their industry.

Despite the steadiness of French exchange commodity prices continue to advance. Iron and steel quotations are decidedly firmer, particularly since the advance in freight rates which became effective Aug. 16. Freight rates were increased approximately 24 per cent, whereas express and passenger rates were advanced 28 and 30 per cent respectively. As an example of present transport costs in France the freight rate on a minimum carload (10,000 kilos) of finished steel products from Longwy to Paris, a distance of 340 kilometers (211 miles), is 92.25 francs per metric ton, which is the equivalent of 11½ cents per 100 pounds at present exchange rates.

Blast furnace capacity is being taxed to meet the unprecedented demand. Production of iron and steel in France now is at the rate of 9,000,000 tons annually. The minimum export price of phosphorus pig iron remains unchanged at £3 7s ($16.25) f.o.b. Antwerp and this figure is respected by all members of the Franco-Belgian-Luxemburg pig iron syndicate. The domestic price in France to founders is being

Franc—$0.0275

maintained at 600 francs ($16.50). It is expected that both the export and domestic price will be adjusted upward Sept. 1 in view of the recent wage increases, higher cost of coke and advances in freight rates.

Shipments of semifinished steel products to England continue at a high rate. Prices have been advanced. Basic bessemer blooms are quoted at £4 7s ($21.10), billets £4 12s 6d ($22.45), sheet bars £4 18s ($23.75), and skelp has been sold to English tubemakers as high as £5 17s 6d ($28.50). All prices f.o.b. Antwerp. The new prices are being easily maintained as both Belgium and Luxemburg have followed the upward movement.

Merchant bars for export have moved up to £5 ($24.20) f.o.b. Antwerp. Shapes are being done around £4 17s 6d ($23.60). Tank plates are quoted at £5 6s ($25.70). Both Belgian and Luxemburg mills are increasing their platemaking capacity and French mills soon will feel their competition keenly. The domestic price of black and galvanized gas tubes remains unchanged. The increase which was expected in export prices due to the recent organization of a tube association or cartel which includes many large European pipemakers may not be made, due to the fact that one important Belgian tubemaker and several Polish mills have remained outside the syndicate.

French Taxes Destroying Profits of Works

Paris, Aug. 31.—(*European Staff Service*)—The annual report of the Societe Anonyme des Acieries de Paris et d'Outreau gives some information on the activities of the company during the past financial year. The concern producers hematite pig iron, ferroalloys, steel castings and ingots. It possesses four blast furnaces, 58 coke ovens, five acid converters, two open-hearth furnaces of 15 tons and one 4-ton electric furnace. The profit for the past year, before deducting amortizations, was 3,108,512 francs ($88,000), or 2,236,092 francs ($63,000) less than for the previous year. The decrease in profits is ascribed particularly to the cost of foreign raw materials and increased fiscal charges. It was pointed out that the calculation of costs is rendered extremely difficult by exchange fluctuations. A dividend of 60 francs ($1.68) per share was declared, but it was negatived by the various taxes which amounted to 111.55 francs ($3.13) per share. This is due to the peculiar way in which French taxes on dividends yielded by certain shares are figured. Three furnaces operated during the year under review.

At the meeting of the Acieries de Rombas, whose plants are situated in Lorraine, it was reported activities of the past year resulted in an improvement, notwithstanding difficulties caused by variation of the franc. Before the war the works of Rombas were owned by Germany. It was stated that the production of steel ingots during the past financial year was 4 per cent in excess of the highest output reached under German control.

Due to excellent coke supplies the basic bessemer steelworks operated smoothly and this resulted in lower production cost. However, selling prices were not satisfactory. Fiscal charges are ten times what they were in 1913.

Industrial Men in the Day's News

Ross H. McMaster, a New Director of American Iron and Steel Institute

STARTING his industrial career as an office boy, steady advancement has brought him to the foreground in the steel industry of Canada.

CLOSE attention to details and thoroughness are some of the characteristics which have contributed in a large measure to his success.

GOLF, tennis and riding are his diversions. His many industrial connections have made him as widely known in the United States as in Canada.

ELECTION this spring as a director of the American Iron and Steel institute has brought added distinction to Ross H. McMaster, president of the Steel Co. of Canada, Ltd., Montreal, Que. His many business connections and activities have made him widely known in the United States as well as in Canada where he is ranked as one of its industrial leaders.

Although his business career was begun in the paint industry, the past 23 years have been spent in building up one of the largest iron and steel companies of Canada. He allied himself with his father in 1903 to form the Montreal Rolling Mills. This company later merged into the organization of which Mr. McMaster now is head. His father retired from the presidency of the Rolling Mills company at the time of the consolidation.

Consistent application and minute attention to details have contributed largely to his success, according to associates of Mr. McMaster. His advancement through various offices from office boy to president has been constant. His first business connection was with the Sherwin-Williams Co., Cleveland, and Montreal, joining the latter office as an office boy. He remained there several years and at the age of 17 was transferred to the Cleveland office as assistant to the vice president and general manager. He left in 1903, however, to enter the steel business.

Mr. McMaster was born in Montreal, Oct. 11, 1880. He was educated at a Montreal high school and the Collegiate institute. Following his connection with the Sherwin-Williams Co. he joined the Montreal Rolling Mills Co. in 1903 as assistant to the general manager and vice president. On the formation of the Steel Co. of Canada, Ltd., in 1910, which absorbed the Montreal company, he was made Montreal manager. In 1916 he was made assistant general manager and in 1919 was elected vice president.

His election to the presidency in March 1926, succeeding the late Robert Hobson, was accepted as a matter of course, Mr. McMaster having directed the policies of the company during the year previous. In addition to his connection with the Steel Co. of Canada, Ltd., he is a director of the Canadian Consolidated Rubber Co. Ltd., Canadian Explosives, Ltd., Canadian Pacific Railway Co., Northern Electric Co. Ltd. and the Royal Trust Co. Mr. McMaster served as a member of the Canadian war mission at Washington in 1918.

Mr. McMaster finds time to indulge in his choice recreations, tennis, golf and riding. He is a member of many social organizations, including the Mount Royal, St. James' Forest and Stream, Royal Montreal Golf, Mount Bruno Country, Montreal Indoor Tennis and Montreal Jockey clubs all of Montreal, the Hamilton club, Hamilton, Ont., and the Rideau club, Ottawa, Ont.

He is noted as a keen student of business and as a forward thinking executive. These qualties added to the possession of an attractive personality have made him one of the ranking industrial figures in present day Canada.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

E. C. BOWERS has been appointed president of the Wickwire-Spencer Steel Co. Inc., 41 East Forty-second street, New York, to succeed D. F. Edwards, resigned. Mr. Bowers was vice president in charge of manufacturing, and will be succeeded in that capacity by Paul M. Macklin, superintendent of the Goddard works of the company, Worcester, Mass. Mr. Bowers was born at Westfield, Mass., in 1881. There he received his early education and later, in 1903, graduated from Yale university. Mr. Bowers first became affiliated with the Wickwire organization in 1911, when he became general manager of mines, with headquarters at Iron River, Mich. In 1922 he went to Worcester, Mass., as assistant general manager of works, and one year later to the executive headquarters in New York City. In 1924, he was appointed vice president in charge of manufacturing.

Mr. Edwards resigned to gratify a lifelong desire to resume university teaching, for which he was specially trained early in life. He has joined the research staff of the graduate school of business administration of Harvard university.

* * *

J. E. Haetten, formerly of J. E. Haetten & Co. Inc., 50 Church street, New York, has become connected with C. W. Prochard Co. Inc., 17 York street, Jersey City, N. J. Both concerns are large dealers in used machinery.

* * *

Deane S. Hazen, manager consultant at Springfield, Mass., for eight years with the National Acme Co., Cleveland, as assistant advertising manager and in charge of plant reorganization, has been appointed assistant sales manager of W. L. Brubaker, & Bros. Co. 50 Church street, New York.

* * *

L. D. Peik has been appointed chief engineer in charge of sandblast and dust suppression equipment for the American Foundry Equipment Co., Mishawaka, Ind. Mr. Peik who formerly was chief engineer of W. W. Sly Mfg. Co., Cleveland, was born in Chilton, Wis., in 1883. He was graduated from the University of Wisconsin, in mechanical engineering. For 11 years he was connected with the Bucyrus Co., South Milwaukee, during which time he contributed many original ideas to the design and erection of some of the first sandblast systems installed in this country. During the World war he was in charge of the Bucyrus department of ordnance equipment with headquarters at Pittsburgh.

For seven years Mr. Peik has been active in the organization of the W. W. Sly Mfg. Co., developed many features of design in sandblast, dust arrester and other foundry equipment.

* * *

Ralph W. Clark, vice president Pilling & Co., in charge of the latter company's New York territory, is expected to return about the end of September from a trip to Europe.

* * *

Clarence R. Rupp, auditor and purchasing agent, New York Central Iron Works Inc., Hagerstown, Md., since 1915, has resigned to become general manager of the Aetna Iron & Steel Co., Jacksonville, Fla., effective Sept. 1. Mr. Rupp was connected with the Central Iron & Steel Co., Harrisburg, Pa., for a number of years prior to going to Hagerstown.

* * *

Harry K. Knapp has been appointed assistant manager of sales for the Carnegie Steel Co., Illinois Steel Co. and Tennessee Coal, Iron & Railroad Co., with offices in the Wilkes building, Washington, under supervision of the Philadelphia office. Edward K. Bauer has been made assistant manager of sales for the same companies at Philadelphia. Both appointments are effective Sept. 1.

* * *

Milton H. Pettit has been elected vice president and appointed assistant general manager of the Nash Motors Co., Kenosha, Wis., with works in Milwaukee and Racine, Wis., and assumes his new duties Oct. 15. After 20 years with the J. I. Case Threshing Machine Co., Racine, Wis., lastly as vice president and general manager, Mr. Pettit resigned three years ago to become vice president of the Simmons Co., steel beds and furniture, in charge of all manufacturing, with headquarters in New York.

Electrifies Rail Mill at Steelton, Pa.

During last July the engines driving the rail mill at the Steelton plant of the Bethlehem Steel Co., Steelton, Pa., were replaced with motors, completing the electrification of this group of mills which was started by electrifying the drive of the blooming mill in December, 1920.

The rail mill which takes blooms consists of a 35-inch 2-high roughing stand and two 28-inch 3-high stands.

The 35-inch mill has been driven by a twin 40x48-inch engine built about 1885 and moved to this location from another mill when the present rail mill was built about 1913. The two 28-inch stands have been driven by a twin-tandem compound 30-inch and 60-inch by 54-inch engine built about 1906 for a plant on Staten Island and moved to Steelton about 1913. Both engines have exhausted into the same condenser.

The reversing engine driving the 35-inch mill has been replaced by a 3500-horsepower reversing motor supplied with power from the general system through a motor-generator set, and the engine driving the 28-inch nonreversing mill has been replaced by a 4000-horsepower induction motor. On the same basis with the motor is mounted a steel plate flywheel weighing approximately 75,000 pounds, and this in turn is coupled to a gear reduction set which gives the mill a speed of 85 to 90 revolutions per minute.

All electrical equipment was designed, built and installed by the General Electric Co., Schenectady, N. Y. ,and the gear reduction set by the Bethlehem Steel Co. The last rail rolled by the mill with the engines was July 3 and the first rail rolled with the new motor drives was four weeks later.

The first rolling mill erected west of the Allegheny mountains to puddle iron and roll bars was built about 1817 between Connellsville and Brownsville, Pa.

Large Uses of Steel

(*Concluded from Page* 652)

joint steel rollers guide cords which connect with artificial muscles.

Because of the importance of reliability in such a joint, the vital parts are made of the strongest materials obtainable. Many of these are made of heat treated alloy steel. The amount of steel used in the average artificial limb weighs about 3 pounds, and of course the total steel required to make these parts is much heavier. The use of artificial limbs is surprisingly large. Those who have studied the question estimate that over 3,000,000 artificial limbs are now in use in this country. One plant devoted to the manufacture of artificial limb hardware has a production of more than 5000 joints a year. Accidents resulting in major operations are the subject of public record, and total for the eastern part of the United States about 150 a week. In addition to this there are many operations not direct results of accidents which do not appear in public reports.

Manufacturers of artificial limbs estimate that there are 50,000 limbs sold each year. Government statistics give the value of artificial limbs and braces manufactured annually as more than $4,000,000. The steel used in this industry is unquestionably large. In additon to the joints mentioned there are some types of limbs which are made almost entirely of steel. One form of leg is deep drawn on presses from a round steel plate. Another type is made up in skeleton form of strip steel welded or riveted together. Nearly all temporary or preparatory legs are made according to this second design. On the assumption that 50,000 artificial limbs are sold each year the amount of steel used would run close to 250 tons according to one of the largest manufacturers, who places the average amount of total steel per limb including the metal lost in manufacturing at 10 pounds. The bulk of the steel used is in the form of drop forgings. These forgings are drilled to take the bearings and the screws or bolts. All steel parts are nickel coated and highly polished. The limbs proper usually are made of selected willow, which is either enameled or covered with leather.

Thomas Rutter is entitled to the honor of erecting the first blast furnace and first forge in Pennsylvania about 1720. The stack was located near Philadelphia.

Obituaries

GEORGE A. McLEAN, who died at his country home in McKean, Pa., Sept. 1 of paralysis after a lingering illness, was born in Allegheny, Pa., about 69 years ago. For many years he was prominent in the iron and steel business at Pittsburgh, a member of the firm of Scott & McLean. After the death of Mr. Scott, the name style was changed to Geo. A. McLean Co. He also was one of the founders and for some years president of the Damascus Bronze Co., Pittsburgh, and for a time was vice president of the Allegheny Steel Co., Brackenridge, Pa.

He retired from active business about 20 years ago and since then divided his time between his farm at Cambridge Springe, Pa., and his place in Florida. He was one of the organizers of the Springs National bank at Cambridge Springs, and for several years was its president. He was a member of the Duquesne club of Pittsburgh.

* * *

William C. Scott ,superintendent of the Waterbury Rope Co. for 36 years, died Aug. 28 at his home in Brooklyn, aged 76 years.

* * *

William D. McRae, Wallaceburg, Ont., founder and president for over 30 years of the McRae & Roberts Brass Co., died Sept. 1 aged 79 years. In addition to his business, Mr. McRae owned the largest stock farm in Canada, 500 acres near Wallaceburg.

* * *

Henry Greve, 70 years old, president of the John Wahl Commission Co., died suddenly of heart disease Aug. 30. For a number of years he bore the title of "Lead King" because of his extensive operations in lead and zinc. He went to St. Louis in 1875, and in 1881 became connected with the John Wall Commission Co.

* * *

A. E. Olmstead, civil engineer, who was in direct charge of the construction of the first New York subway, died recently at his home in East Hartford, Conn., aged 80 years. He was a member of the American Society of Civil Engineers, New York Academy of Sciences and many other organizations.

* * *

Phelix Schoenthal, general auditor for the Dominion Iron & Steel Co. of Canada, died recently at his home in Brookline, Mass. Born in Germany in 1856 Mr. Schoenthal came to America at an early age and for years was associated with Charles M. Schwab and H. C. Frick in the steel and coke industries at Pittsburgh.

* * *

Samuel H. Squier, until a few months ago vice president of the Milwaukee Electric Crane & Mfg. Co., died Sept. 1 at his home in Milwaukee, aged 61 years. He was one of the founders of the Milwaukee company.

* * *

William F. Fenske, chief engineer of the Kenosha, Wis., plant of the Simmons Co., New York, died Aug. 30, aged 50 years, after a long illness. He entered the employ of the Simmons Co. in its original works at Kenosha as an electrician 30 years ago.

* * *

Byron M. Weller, 47 years old, superintendent of the flour milling machinery department of the Nordyke & Marmon Flour Mill Corp. in Indianapolis from 1918 until about two years ago when he was forced to retire on account of ill health, died Sept. 2 at his home. Prior to coming to Indianapolis, Mr. Weller served as general superintendent of the Colburn Tool Co. and the Producers Supply Co., at Franklin, Pa.

Simplification Proves Worth

Simplified practice applied to self opening die head chasers has brought a number of advantages to the user, C. W. Bettcher, secretary of the Eastern Machine Screw association, reports to the department of commerce. These advantages comprise prompter delivery; saving of extra charges for "specials"; better quality, closer tolerance and greater uniformity; reduction of chaser stock; better fit between screws and tapped holes; ability to use standard gages stocked by gage manufacturers; and assembly with standard threads instead of "mongrels."

Experiments in ironmaking in Pennsylvania first were made about 1692 but the industry was not established until 1716.

First Half Iron Output Gains

Compiled by American Iron ann Steel Institute

HALF-YEARLY PRODUCTION OF PIG IRON BY STATES.*

States.	Blast furnaces, June 30, 1926. In.	Out.	Total.	Production of pig iron, not including ferro-alloys—Gross tons. First half of 1925.	Second half of 1925.	First half of 1926.
New York	15	12	27	1,095,584	975,270	1,329,074
New Jersey	0	3	3			
Pennsylvania	67	54	121	6,525,784	5,713,992	6,861,089
Maryland	5	1	6	334,062	351,600	408,126
Virginia	1	15	16	61,194	52,387	40,580
Alabama	23	14	37	1,430,973	1,384,715	1,442,882
Texas	0	1	1	315,395	335,088	241,321
West Virginia	2	2	4			
Kentucky	1	4	5			
Mississippi	0	1	1			
Tennessee	1	12	13	39,867	55,663	47,315
Ohio	48	17	65	4,479,076	4,288,696	4,618,238
Illinois	17	8	25	2,008,260	1,595,995	1,836,875
Indiana	17	1	18	2,096,004	2,023,807	2,277,593
Michigan	9	3	12			
Wisconsin	2	4	6	207,336	261,143	266,459
Minnesota	2	1	3			
Missouri	0	3	3			
Colorado	2	3	5	258,092	226,328	310,185
Utah	1	0	1			
Total	213	159	372	18,851,627	17,264,684	19,679,737

HALF-YEARLY PRODUCTION OF COKE PIG IRON BY STATES.*

New York	15	11	26	1,095,584	975,270	1,329,074
New Jersey	0	3	3			
Pennsylvania	67	†53	120	6,525,784	5,713,992	6,861,089
Maryland	5	1	6	334,062	351,600	408,126
Virginia	1	15	16	61,194	52,387	40,580
Alabama	23	11	34	1,423,857	1,377,488	1,437,069
Texas	0	1	1	315,395	335,088	241,321
West Virginia	2	2	4			
Kentucky	1	4	5			
Tennessee	1	9	10	33,512	42,780	47,315
Ohio	48	17	65	4,479,076	4,288,696	4,618,238
Illinois	17	8	25	2,008,260	1,595,995	1,836,875
Indiana	17	1	18	2,012,343	1,944,885	2,206,045
Michigan	4	0	4			
Wisconsin	2	3	5	207,336	261,143	266,459
Minnesota	2	1	3			
Missouri	0	2	2			
Colorado	2	3	5	258,092	226,328	310,185
Utah	1	0	1			
Total	208	†145	†353	18,754,495	17,165,652	19,602,376

HALF-YEARLY PRODUCTION OF CHARCOAL PIG IRON.*

New York	0	1	1	97,132	99,032	77,361
Pennsylvania	0	1	1			
Alabama	0	3	3			
Tennessee	0	3	3			
Mississippi	0	1	1			
Michigan	5	3	8			
Wisconsin	0	1	1			
Missouri	0	1	1			
Total	5	14	19	97,132	99,032	77,361

HALF-YEARLY PRODUCTION OF ALL KINDS OF FERRO-ALLOYS BY STATES.‡

New York	0	0	0	57,348	59,531	64,250
New Jersey	0	0	0			
Pennsylvania	7	5	12	125,437	158,272	174,566
Maryland	0	0	0	38,673	8,988	20,230
Virginia	1	0	1			
West Virginia	0	0	0			
Tennessee	0	1	1			
Alabama	1	0	1	72,665	63,341	77,299
Ohio	2	2	4			
Iowa	0	0	0			
Total	×11	8	‖19	294,123	290,132	336,345

TOTAL PRODUCTION OF PIG IRON AND FERRO-ALLOYS ACCORDING TO FUEL USED.

Coke pig iron	208	†145	†353	18,754,495	17,165,652	19,602,376
Charcoal pig iron	5	14	19	97,132	99,032	77,361
Total pig iron	213	159	372	18,851,627	17,264,684	19,679,737
Total ferro-alloys	×11	8	‖19	‡294,123	‡290,132	‡336,345
Grand total	224	167	391	19,145,750	17,554,816	20,016,082

* Does not include the production of ferro-manganese, spiegeleisen, ferro-silicon, or other ferro-alloys.
† Includes 1 idle anthracite coal and coke furnace.
‡ Includes ferro-manganese, spiegeleisen, ferro-silicon, and other ferro-alloys made in blast furnaces or in electric furnaces.
× During the first half of 1926 there were 18 blast furnaces in operation making ferro-alloys only or ferro-alloys and pig iron.
‖ Blast furnaces only; electric furnaces not included.

HALF-YEARLY PRODUCTION OF BASIC PIG IRON.

States.	First half of 1925.	Second half of 1925.	First half of 1926.
New York	478,890	338,542	533,272
Pennsylvania—Allegheny County	1,887,993	1,532,210	2,051,375
Other counties	2,004,579	1,898,670	2,222,357
West Virginia, Alabama, Kentucky	869,341	920,883	911,818
Ohio	2,065,215	2,156,599	2,063,936
Indiana, Illinois	2,710,902	2,257,790	2,658,426
Michigan, Minnesota, Colorado, Utah	283,467	262,299	370,271
Total.....Gross tons.	10,300,387	9,366,993	10,811,455

HALF-YEARLY PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON.

Pennsylvania	2,000,914	1,790,501	1,951,994
New York, Md., West Virginia, Tenn., Ala.	565,063	649,329	633,835
Ohio	1,693,303	1,562,400	1,742,249
Indiana, Illinois, Wisconsin	602,788	555,163	655,474
Total	4,862,068	4,557,393	*4,983,552

* Includes 145,467 tons of low-phosphorus pig iron.

HALF-YEARLY PRODUCTION OF FOUNDRY PIG IRON.

New York	392,724	380,184	497,129
Pennsylvania	503,059	439,875	533,089
Maryland, Virginia, Kentucky, Tenn.	125,995	114,515	107,246
Alabama	705,671	632,521	683,659
Ohio	378,266	287,624	431,122
Illinois	204,639	216,611	223,594
Michigan	279,809	215,294	226,372
Wisconsin, Minnesota, Colorado, Utah	146,792	160,166	165,023
Total	2,736,955	2,446,790	2,867,234

HALF-YEARLY PRODUCTION OF MALLEABLE PIG IRON.

New York	104,018	91,147	117,747
Pennsylvania	51,192	37,823	54,457
Ohio	255,477	256,130	332,266
Indiana, Illinois, Mich., Wis., Minn.	330,191	427,658	368,804
Total	740,878	812,758	873,274

HALF-YEARLY PRODUCTION OF FORGE PIG IRON.

New York, Pennsylvania, Virginia	80,887	15,508	50,531
Alabama	23,682	20,450	13,214
Ohio	80,378	19,747	36,034
Total	184,947	55,705	99,779

HALF-YEARLY PRODUCTION OF MISCELLANEOUS GRADES OF PIG IRON AND DIRECT CASTINGS.

New York, Pennsylvania, Alabama	8,851	6,557	8,664
Ohio	6,437	6,196	12,631
Indiana, Illinois, Michigan, Wisconsin	11,104	12,292	23,148
Total	26,392	25,045	44,443

HALF-YEARLY PRODUCTION OF FERRO-ALLOYS BY KINDS.

Ferro-manganese	131,560	128,469	150,855
Spiegeleisen	31,384	34,371	41,890
Ferro-silicon	116,175	110,297	122,057
Ferro-phosphorus and all other ferro-alloys	15,004	16,995	21,543
Total	294,123	290,132	336,345

PIG IRON AND FERRO-ALLOYS MADE FOR SALE OR FOR USE OF MAKERS IN THE FIRST HALF OF 1926.

Pig iron and ferro-alloys.	For sale.	For maker's use.	Total, Gross tons.
Pig Iron:			
Basic	959,429	9,852,026	10,811,455
Bessemer and low-phosphorus	312,217	4,671,335	4,983,552
Foundry	2,582,601	284,633	2,867,234
Malleable	769,052	104,222	873,274
Forge or mill	27,731	72,048	99,779
White and mottled, direct castings, etc.	20,414	24,029	44,443
Total pig iron	4,671,444	15,008,293	19,679,737
Ferro-alloys:			
Ferro-manganese	46,867	103,988	150,855
Spiegeleisen	41,890		41,890
Ferro-silicon	122,057		122,057
All other ferro-alloys	21,164	379	21,543
Total ferro-alloys	231,978	104,367	336,345
Total pig iron and ferro-alloys	4,903,422	15,112,660	20,016,082

Pig Iron Output

Shows Gain in First Half—Institute Reclassifies Statistics

Production of coke pig iron and all ferroalloys in the United States in the first half of 1926 amounted to 20,016,082 gross tons, according to official statistics just announced by the American Iron and Steel institute. This was the largest first half production since 1923, when the total was 21,016,475 tons. Against the revised output of 19,145,750 tons during the first half of 1925, the current year's production shows an increase of 870,332 tons, or 4.5 per cent. As compared with the last half production of 1925, it shows a gain of 2,461,266 tons, or 14 per cent.

The institute's production statistics as reproduced on the opposite page shows the various divisions of the 1926 production as compared with those of 1925. It is to be noted that beginning with this year, production of ferroalloys is classified separately, whereas formerly ferroalloys were included in coke pig iron. This reclassification follows the suggestion of pig iron producers that ferroalloys be segregated from pig iron. However, this tonnage finally is included in the grand total. A new feature in the institute's compilation is a table showing the output of miscellaneous grades of pig iron and direct castings.

Of the total of 20,016,082 tons of iron and ferroalloys made during the first six months of this year, pig iron totaled 19,679,737 tons and ferroalloys, 336,345 tons. In the first half of last year, the division was 18,851,627 tons of pig iron and 294,123 tons of ferroalloys; during the last half it was 17,264,684 tons of iron and 290,132 tons of ferroalloys.

Of the 19,679,737 tons of pig iron made in the first half, 19,602,376 tons was made with coke and 77,361 tons with charcoal. In the first half of last year, 18,754,495 tons was made with coke and 97,132 tons with charcoal. No iron has been made with anthracite or mixed anthracite and coke since the last half of 1923.

According to grades, the first half production was as follows: basic, 10,811,455 tons; bessemer and low phosphorus, 4,983,552 tons; foundry, 2,867,234 tons; malleable, 873,274 tons; forge or mill, 99,779 tons; white and mottled, direct castings, etc., 44,443 tons; ferromanganese, 150,855 tons; spiegeleisen, 41,890 tons; ferrosilicon, 122,057 tons; and other ferroalloys, 21,543 tons. As compared with the corresponding period of last year, basic made a gain of 4.9 per cent; bessemer, a gain of 2.5 per cent; foundry a gain of 4.7 per cent; malleable, a gain of 17.8 per cent; while forge, showed a loss of 46 per cent.

Of the total pig iron and ferroalloys output during the 1926 first half, 4,903,422 tons was made for sale and 15,112,660 tons was made for the makers' own use. The ratio of merchant to nonmerchant iron was 32.4 per cent, as against 31.2 per cent in the first six months of last year and 35.5 for the same period two years ago.

According to the size of their outputs of coke and charcoal pig iron, Pennsylvania was first with 6,861,089 tons; Ohio second with 4,618,238 tons and Illinois third with 1,836,875 tons. Pennsylvania and Ohio alone produced 57.3 per cent of the total. On a percentage basis, Pennsylvania made 34.8 per cent of the country's total; Ohio, 23.4 per cent; and Illinois, 9.3 per cent. Together, the three states made 67.5 per cent of the total. The corresponding figure for 1925 was 69 per cent. On June 30 there were 213 blast furnaces operating and 159 idle. The corresponding figures for 1925 were 198 and 211, respectively.

Holds Lead In Machinery Exports To Chile

The predominant position occupied by the United States in the industrial machinery market of Chile is manifested by the fact that for each year of the past decade American participation in this trade has represented at least 36 per cent of the total machinery imports. No other country exporting machinery to Chile as equaled this percentage during that period.

Exports of industrial machinery from the United States to Chile in 1910 were but 24 per cent of the total machinery business placed, declining to 12 per cent in 1912, a low figure which never has been reached since. American participation from 1912 onward advanced rapidly until the peak was reached in 1917, when shipments from the United States accounted for more than 89 per cent of the imports for that year, and at which level shipments continued for the next 2 years. Following this period and coincident with post-war readjustment in world machinery markets, the unnaturally high position occupied by America as a result of emergency conditions created by the war gradually declined to a lower and more permanent level.

That the United States has since maintained its important position established during the war years is evidenced by the fact that during 1922 it produced 36 per cent of the total machinery imported by Chile, more than 48 per cent in 1923, and 38 per cent in 1924, the latest year for which import statistics are available.

Give Drawback on Alloys

Washington, Sept. 7.—The treasury department has announced the allowance of drawback on type metal alloys manufactured by the Imperial Type Metal Co., Philadelphia, with the use of imported antimony, pig lead, antimonial lead, and type metal, or with the use of imported antimony in conjunction with pig lead, antimonial lead, and type metal produced from imported ores by manufacturers who operate under established drawback rates.

Hackett Brass Foundry & Machine Shop, Detroit, has increased capital from $9000 to $26,000.

Convention Calendar

Sept. 7-10—New Haven Machine Tool exhibition. Annual exhibit at Mason laboratory, Yale university, New Haven, Conn. Administrative offices, 400 Temple street, New Haven, Conn.

Sept. 8-9—Lake Superior Mining Institute. Twenty-fifth annual meeting at Ironwood, Mich. A. J. Youngbluth, Ishpeming, Mich., is secretary.

Sept. 13-15—Concrete Reinforcing Steel institute. Semiannual meeting at French Lick, Ind. M. A. Beeman, 435 North Michigan avenue, Chicago, is secretary.

Sept. 16-17—Ohio State Foundrymen's association. Annual meeting at Hotel Sinton, Cincinnati. Arthur J. Tuscany, 5713 Euclid avenue, Cleveland, is secretary.

Sept. 20-25—American Society for Steel Treating. Eighth annual convention and exposition at Municipal Pier, Chicago. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

Sept. 21-23—Society of Automotive Engineers. Production meeting at Hotel Sherman, Chicago. John Warner, 29 West Thirty-ninth street, New York, is manager of meetings department.

Sept. 27-Oct. 1—American Foundrymen's association. Second international congress and exposition at Michigan State Fair Grounds, Detroit, C. E. Hoyt, Marquette building, Chicago, is secretary.

Oct. 5-6—National Association of Manufacturers. Thirty-second annual meeting at Waldorf-Astoria hotel, New York. George S. Boudinot, 50 Church street, is secretary.

Oct. 7-9—American Electrochemical society. Fall meeting at Hotel Washington, Washington. Dr. Colin G. Fink, Columbia university, New York, is secretary.

Oct. 11-13—American Management association. Autumn conference at Hotel Statler, Cleveland. W. J. Donald, 20 Vesey street, New York, is managing director.

Oct. 11-15—American Gas association. Annual convention and exposition at Atlantic City, N. J. Alexander Forward, 342 Madison avenue, New York, is secretary-manager.

Oct. 14-16—American Gear Manufacturers' association. Fall meeting at Briarcliff Lodge, Briarcliff Manor, N. Y. T. W. Owen, 2443 Prospect avenue, Cleveland, is secretary.

Oct. 22—American Iron and Steel institute. Fall meeting at Hotel Commodore, New York. E. A. S. Clarke, 40 Rector street, New York, is secretary.

Oct. 25-29—National Safety council. Annual congress and exhibition at Detroit. W. H. Cameron, 108 East Ohio street, Chicago, is managing director.

Machinery

August Shows More Business Than July and September Gives Promise of Increased Buying—Railroads in Eastern Market

ALTHOUGH the last week has shown some slowing up of machine tool and equipment purchases, largely as a result of holiday influences, the total business of August was somewhat better than July. Good inquiries and indications of renewed interest, point to September making a gain in sales. Carnegie Steel Co. is filing bids on a list of 97 machines for Clairton, Pa. Much of the buying against the list of Westinghouse Electric & Mfg. Co. will be deferred to fourth quarter. Considerable railroad business is pending in New York, while little activity is noted in the Chicago territory. Railroads having inquiries include Boston & Maine; Central Railroad of New Jersey; Erie railroad, Lehigh Valley and New York Central.

New York, Sept. 7.—Reflecting holiday influences, the local machine tool market is rather quiet. No outstanding orders or inquiries are noted. Prospects, however, are favorable, with railroad business particularly promising. Pending railroad inquiries include those of Boston & Maine, Central Railroad of New Jersey, Erie railroad and Lehigh Valley. This latter railroad is now rechecking prices on a sizeable list issued several months ago; however, the trade does not look for any action on this list soon. New York, New Haven & Hartford still has a few machines pending and the New York Central is actively figuring on a fair sized list, comprised of various individual inquiries. Lehigh & Hudson is inquiring for a 5-foot radial drill. Pennsylvania railroad is inquiring for 1500 tons of structural steel for a tank service shop at Altoona, Pa., for which a substantial amount of fabricating equipment likely will be required. General Electric Co. is inquiring for a milling machine and two 18-inch engine lathes and is understood to have closed recently on several machines. The city of New York is inquiring for a 24-inch lathe. Delco Light Co., Dayton, O., has closed on nine automatic lathes with Pratt & Whitney Co. This seller also has booked four profilers for a pattern works in Detroit; a 16-inch geared head lathe for a steel company at Johnstown, Pa., and a die sinker for a tool company in Detroit. Lima Locomotive Works, Lima, O., has closed on a 66-inch, 300-ton hydraulic wheel press with Niles-Bement-Pond Co. This builder has also been awarded a 62-inch boring and turning mill for a Pittsburgh steel company; 62-inch horizontal boring and drilling machine for a tool company in Flint, Mich., and a 72-inch horizontal boring, drilling and milling machine for a Cleveland concern.

Boston, Sept. 7.—Activity in the Boston district about holds it own. Some of the textile machine manufacturers report better business and are in the market for tools. One of these in the Worcester, Mass., district bought a radial drill and a centerless grinder. Several other Worcester manufacturers have been buyers during the week and sales include two heavy presses, a multiple drill, a key seating machine and several lathes. In Connecticut, buying has subsided recently in anticipation of the New Haven machine tool exhibit this week. Inquiry of a definite nature is lacking but New York, New Haven & Hartford railroad has an extensive buying program under consideration and much other buying in the district is in prospect.

Pittsburgh, Sept. 7.—Action on a number of propositions up for some time will probably be taken this week, last week having been quiet as far as sales are concerned. August on the whole, was much better than July and the remainder of this month is expected to be in keeping with it. Carnegie Steel Co. is filing bids on its list of 97 items for Clairton, Pa. While Westinghouse Electric & Mfg. Co. bought a few items, it is deferring action on its major list for the fourth quarter. Pennsylvania railroad still is deferring action on two grinders, and Pittsburgh & Lake Erie railroad is considering the purchase of two large millers as well as other special equipment. A list is expected shortly from Guaranteed Liquid Measure Co., Rochester, Pa., involving equipment for two additions. It is understood here that equipment for the plant at Coraopolis, Pa., of Russell, Burdsall & Ward Bolt & Nut Co., will be placed at Port Chester, N. Y. Several crane inquiries are pending, the largest being that of Carnegie Steel Co. for Houston, Tex.

Cleveland, Sept. 7.—September has made a fair start in sales and judging from inquiries should show improvement over August, which was much better than had been expected. No large inquiries are pending but a great number of single tool specifications are in hand. Automobile manufacturers in Detroit continue to place orders for equipment spasmodically. Used tools are in good demand.

Chicago, Sept. 7.—The machine tool market here has been quiet during the past week, with the Illinois Steel Co. list now being figured on. Sales have been small with a fair volume. The last half of August turned out better than the first half, however, so that the month proved only slightly below July. Railroad buying is negligible. Chicago, Rock Island & Pacific has purchased two gap lathes from a local machinery dealer. Inquiry is good but it is expected that little will be bought until late September. Stewart-Warner Speedometer Corp., Chicago, is asking prices on grinders and drills, but for valuation purposes only, it is understood. A scarcity of used tools has developed in this territory and dealers are unable in some instances to get what customers demand. Planers are in good demand and prices are holding up.

CRANE ORDERS PLACED

Three 5-ton electric traveling cranes for West Penn Cement Co., Butler, Pa., to Northern Engineering Works.

Three 5-ton electric overhead cranes for American Sugar Refining Co., Brooklyn, N. Y., awarded through Stone & Webster to Milwaukee Electric Crane & Mfg. Co.

Among single orders were: 15-ton 4-motor electric traveling crane with 2-ton auxiliary for Virginian railway, Roanoke, Va., understood to be for installation at Princeton, W. Va., to Northern Engineering Works; 10-ton trolley for J. E. Moss Iron Works, Wheeling, W. Va., to Northern Engineering Works; 30-ton electric traveling crane for Bethlehem Mines Corp., Bethlehem, Pa., to Northern Engineering Works; 5-ton overhead crane for Pittsburgh Plate Glass Co., to Milwaukee Electric Crane & Mfg. Co.; 30-ton overhead crane with 5-ton auxiliary for Carnegie Steel Co., to Alliance Machine Co.; 20-ton locomotive crane for Franklin Lumber Co., Newark, N. J., to Browning Crane Co.; 7½-ton electric crane for Lock Joint Pipe Co., East Orange, N. J., for Providence, R. I., to Shepard Electric Crane & Hoist Co.; 3-ton 2-motor crane for R. H. Comey & Co., Brooklyn, N. Y., to Shepard Electric Crane & Hoist Co.

CRANE ORDERS PENDING

Four electric cranes for Billerica, Mass., shops of Boston & Maine railroad, award expected shortly; specifications call for one 25-ton and three 10-ton cranes.

Cranes and hoists for Coraopolis, Pa., plant of Russell, Burdsall & Ward Bolt & Nut Co.; to be placed at Port Chester, N. Y.

Gantry crane for Big Four railroad, Cincinnati; bids being compiled.

Gantry crane for American Sheet & Tin Plate Co., Pittsburgh; bids being asked.

Cranes for Carnegie Steel Co., Houston, Tex., and other points; some action expected this week.

Week's Imports Listed

Philadelphia, Sept. 7.—Importations at this port for the week ending Aug. 28 were as follows: 200 tons pig iron, Netherlands; 3250 tons pig iron, Germany; 1518 tons pig iron, British India; 83 tons steel bars, Belgium; 178 tons structural steel, Belgium; 267 tons cast iron pipe, Belgium; two tons ferrotungsten, England; five tons steel strips, England; two tons steel billets, Germany; 10 tons manganese ore, Germany; 5450 tons iron ore, Algeria; 22 tons scrap brass, Canada.

During the Revolution cannon and cannon balls were cast at blast furnaces in Pennsylvania. Sixty cannon alone were cast at the Warwick furnace in 1776.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

LITTLE ROCK, ARK.—Owens-Hill Motor Co., 920 Main street, will build service and sales building 140x150 feet.

ALHAMBRA, CALIF.—C. F. Braun Co., manufacturer of valves and heaters, will build a 1-story addition.

INGLEWOOD, CALIF.—Kroehler Mfg. Co., 5111 Santa Fe avenue, Los Angeles, will build a 3-story factory 170 x 200 feet at Redondo boulevard and Damask street, for manufacture of sanitary supplies. N. W. Alpaugh, 2404 West Seventh street, Los Angeles, is architect.

SAN FRANCISCO—California Electric Supply Co., 643 Mission street, is having plans made by O'Brien Bros. Inc., 315 Montgomery street, architects, for a 2-story shop building at Folsom and Twelfth streets.

MILFORD, CONN.—Devon Metal Goods Co. Inc. has been formed with $20,000 capital by Walter D. Grout of West Haven, Conn., and Anton C. Raffan and Jacob P. Koskuba of Bridgeport, Conn.

NEW HAVEN, CONN.—New Haven Clock Co., Hamilton street, will build a 2-story addition 60x112 feet.

NEW HAVEN, CONN.—Ockert Safe Co. Inc. of New Haven, has been incorporated by Charles A. Ockert president, Harry F. Ockert, vice president, August H. Ockert, secretary and treasurer.

NEW HAVEN, CONN.—Home Oil Burner Co. Inc. has been incorporated with $50,000 capital to manufacture oil burning equipment by Leslie W. Holmes and Charlotte F. Holmes, Stratford, Conn., and Samuel C. Morehouse, New Haven.

NORWALK, CONN.—The Stetson Textile Machine Corp. has been organized with $50,000 capital to begin a machinery manufacturing business by Thomas R. Stetson and Towers F. Hamilton of Norwalk, Conn., and Thomas E. Heatly of Mamaroneck, N. Y.

CHICAGO—Western Screw Mfg. Co., 4413 West Kinzie street, has bought property adjoining its plant for expansion.

CHICAGO—C. Reutcher, 3935 North Spaulding avenue, will built a 1-story machine shop 34 x 65 feet. E. N. Braucher, 10 North Clark street, is architect.

CHICAGO—International Harvester Co., 606 South Michigan avenue, will build a 1-story tractor assembly building 60x500 feet. W. D. Price, company architect, is drawing plans.

CHICAGO—C. J. Dorff Mfg. Co., Madison and Aberdeen streets, manufacturer of screw machine products, will build a 2-story factory 40x130 feet.

CHICAGO—Chicago Screw Co., 1028 South Homan avenue, has let contract to J. Hammond Co., 2234 Flournoy street, for a 1 and 2-story plant 116x124 feet.

CHICAGO—Reading Hardware Co., 211 Lake street, is taking bids on extensive alterations and additions to its plant, plans by Arthur B. Maiwurm, 1100 North boulevard, Oak Park, Ill.

CHICAGO—Economy Pump Machinery Co., 122 Curtis street, has let contract to Heidel & Beck, 6235 South Michigan boulevard, for a 2-story office and factory building 100 x 177 feet at 3431 West Forty-eighth place. A. Epstein, 2001 West Pershing road, is architect and engineer.

Where additional information is presented, reference is made to date of issue in which previous item appeared.

CHICAGO—Illinois Automatic Oil Burner Co., 5540 North Clark street, has been incorporated with $25,000 capital and 200 shares no par value to manufacture and install heating apparatus by John T. Hayes, Henry M. Anderson and Charles J. Lundberg. Eklund & Anderson, 4753 Broadway, are correspondents.

CHICAGO—Mechanical Specialties Mfg. Co., 1619 Washtenaw avenue, has been incorporated with $25,000 capital to manufacture machinery, appliances, castings and implements by Sam McCallen, Hattie R. McCallen and Ruth Lange. Jenkins & Kirkpatrick, 1775 Transportation building are correspondents.

EAST ST. LOUIS, ILL.—Methudy Enamel Range Co., State and Twentieth streets, has been incorporated with $250,000 capital and 2330 shares no par value to manufacture enameled steel gas ranges and stoves, by Eugene R. Methudy, Fred T. Courtaway and George Glakemeier Jr. Kramer, Kramer & Campbell, Murphy building, East St. Louis, Ill., are attorneys.

RIVERDALE, ILL.—Acme Steel Co. is building an addition 100x500 feet, equipped with traveling crane, to house cutting, slitting and edging machinery, pickling and oiling equipment and other finishing departments.

ROCKFORD, ILL.—Rockford Wire Goods Co., 1426 Rock street, has been incorporated with $5000 capital to manufacture wire goods and wire products by Fred J. Collins, Charles Sherman and William Sherman. George T. Liddell, Forest City Bank building, Rockford, is attorney.

AURORA, IND.—Stedman Foundry & Machine Co. is building a 1-story addition for foundry use, 27 x 180 feet.

EVANSVILLE, IND.—Evansville Metal Bed Co. has been incorporated with $100,000 capital to manufacture iron and metal beds by William A. Koch, Albert F. Karges, Carl W. Bingaman and John P. Frisse.

FORT WAYNE, IND.—Johns Equipment Co. has been incorporated with $20,000 capital to manufacture construction and industrial machinery and supplies by E. W. Johns, Herschel Platt and J. C. Warner.

FORT WAYNE, IND.—Wayne Tank & Pump Co., B. F. Geyer general manager, is having plans drawn for a 2-story plant 62 x 86 feet. C. R. Weatherhogg, 250 West Wayne street, is architect.

MARION, IND.—Economy Box & Pie Plate Co., W. H. Arthur general manager, has let contract to C. W. Barley, 324 North Branson street, for 1-story plant 80 x 117 feet.

TIPTON, IND.—General Piston Ring Co. is having plans drawn for a 1-story addition 27 x 149 feet.

NEW ORLEANS—Holzer Sheet Metal Works Inc. has been incorporated with $100,000 capital by Rudolph Holzer, 129 Audubon boulevard, and others.

BALTIMORE, MD.—Mercury Transit Co., Sisson and Twenty-third streets, has been incorporated with $100,000 capital to manufacture automobile accessories by Charles J. Schulteis and Norman E. Rogers.

CUMBERLAND, MD.—Cumberland Foundry Co. Inc. has been incorporated with $5000 capital by Roy Lentz and Augustus Markham.

BOSTON—Riley Loom Corp. has been incorporated to manufacture tools, parts and machines, with 1000 shares no par value by Francis B. Riley, president, and G. Denny Moore, treasurer, Orange, N. J.

BOSTON—John Gallivan Co. Inc. has been incorporated with $12,000 capital to manufacture and install heating and ventilating devices by Maurice J. Scott, president, 69 Toxteth street, Brookline, Mass.; Mary C. O'Neil, treasurer, 47 Foskett street, West Somerville, Mass., and J. A. Gallivan, clerk.

EVERETT, MASS.—Everett Motor Co. has been incorporated to manufacture automobiles and motors with $5000 capital by Ernest L. Wood, president, 17 Parlin street, Everett, Loran F. Sanford, and Clara G. Wood.

WESTBORO, MASS.—Foster Machine Co., South Broad street, is building an addition to its plant. M. B. Harding, 6 Main street, Worcester, Mass., is architect.

WOBURN, MASS.—Massachusetts Gear & Tool Co., 30 Nashua street, has let contract to F. W. Greydon, 7 Lowell street, for a 1 and 2-story addition 70x82 feet.

DETROIT—Automatic Products Co., 1145 West Grand boulevard, is building 1-story plant on Bangor street 60 x 150 and 58 x 65 feet.

DETROIT—Owen Heat Unit, 4456 Cass avenue, W. J. Owen president, has been incorporated with $150,000 capital to manufacure oil burners.

DETROIT—Vinco Tool Co., R. A. Putnam manager, 407 East Fort street, has let contract to Leto Bros., 1432 St. Aubin street, for a 1-story factory building 50 x 90 feet. T. C. Hughes, 2615 Joy road, is architect.

HILLSDALE, MICH.—Richard Bros. Die Works, 1560 East Milwaukee avenue, Detroit, has let contract to Frank L. Shoemaker, Sturgis, Mich., for a 1-story factory building 34 x 90 feet. J. Lawson Miller, 315 Goebel building, Detroit, is architect.

NEW HAVEN, MICH.—New Haven Foundry has been incorporated with $10,000 capital and 5000 shares no par value to manufacture

castings of iron and other metals by W. L. Jenks, Sumner Lamkins and Gus Hill, 1327 Pine Grove avenue, New Haven.

JOPLIN, MO.—Empire Electric Machinery Co. will build a warehouse at Joplin and Twelfth streets as an addition to its plant.

KANSAS CITY, MO.—United States Register Co., Battle Creek, Mich., has let contract to James E. Taylor, 318 Reliance building, for addition to plant on West Fifth street. J. R. Payne, manager.

KANSAS CITY, MO.—J. R. Siebrandt Mfg. Co. Inc., 3239 Troost avenue, has established plant for manufacture of fracture and surgical appliances, installing dies, presses and cutting machines.

KANSAS CITY, MO.—United States Register Co., J. R. Payne branch manager, is building an addition to its branch factory here to double its capacity. R. H. Sanneman is architect.

ST. LOUIS—Stinson Adding Machine Improvement Co., 321 South Grand avenue, will build a 2-story plant 60x240 feet.

ST. LOUIS—James R. Kearney Corp., James R. Kearney president, has been incorporated to manufacture underground and overhead utility equipment.

ST. LOUIS—Elliott & Barry Engineering Co., 1426 Olive street, James Barry president, is considering plans for a 2-story plant 55x150 feet.

ST. LOUIS—M-H Co. has been incorporated with 500 shares no par value to manufacture shock absorbers and automobile supplies by G. Misch, 303 Cedar street, Harry Walker and Merle Becker.

ST. LOUIS—Century Electric Co., E. S. Pillsbury president, 1806 Pine street, fans and motors, has let contract to Wimmer Contracting Co., Victoria building, for a top addition of two stories 80x130 feet. Klipstein & Rathman, Security Trust building, are architects.

HASTINGS, NEBR.—City of Hastings, A. T. Bratton clerk, city hall, is considering an addition to the municipal power plant, 42 x 73 feet.

NASHUA, N. H.—William Highton & Sons Co., manufacturer of automobile locks and hardware, will rebuild its burned plant and replace equipment.

BLOOMFIELD, N. J.—Bakelite Corp., 230 Grove street, main offices 247 Park street, New York, will build a 2-story factory addition.

IRVINGTON, N. J.—McPike Mfg. Co. has been incorporated with $25,000 capital to manufacture automobile supplies by Henry G. McPike, Isebelle M. McPike, Irvington; J. Leonard Kusterer, Belleville; and Margaret Schetslich, Newark.

JERSEY CITY, N. J.—Seaboard Terminal Refrigerating Co. will build a 10-story storage and refrigerating plant at Monmouth and Eleventh streets.

JERSEY CITY, N. J.—Chillingworth Mfg. Co., Corbin and West Side avenues, manufacturer of pressed steel gear cases, will rebuild burned portion of its plant and replace damaged equipment.

NEWARK, N. J.—Dispend Oil Machine Co. will build a plant at 299 Market street.

NEWARK, N. J.—Gamon Meter Co., 282 South street, manufacturer of valves and water meters, will build a 1-story addition to its plant.

NEWARK, N. J.—Master Voting Machine Co. has been incorporated with $50,000 capital and 750 shares no par value to manufacture machinery by Charles Blume, Rahway, N. J., Morris Barr, Newark, and Harry Silverstein, Millburn.

TRENTON, N. J.—Triple Reflecting Arc Lamp Co. has been incorporated with 1200 shares no par value to manufacture electrical supplies and appliances by Charles C. Hildinger, Trenton, Max Probanski, New York, and Lee W. Newberry, Allenhurst. Green & Matlack, Asbury Park, N. J., are attorneys.

UNION CITY, N. J.—Reiss Premier Pipe Co., 400 Forty-fifth street, has let contract to Bonano Bros., 388 Bergenline street, for a 3-story addition 30 x 107 feet at New York avenue and Forty-fifth street.

ELMIRA, N. Y.—American LaFrance Fire Engine Co., manufacturer of fire-fighting equipment, will build a 1-story service building and factory branch at Twenty-fifth and Westmoreland streets. Carson & Carson, 22 South Fifteenth street, are architects.

LONG ISLAND CITY, N. Y.—Manhattan Die Casting Corp., 92 Twenty-second street, suffered loss by fire to stock and equipment, which will be replaced.

LONG ISLAND CITY, L. I.—Long Island Mechanical Plating Co. has been incorporated with $10,000 capital by F. L. Kaiser, F. Kaiser Jr. and J. R. Cusack. J. E. Willcox, Long Island City, is attorney.

NEW YORK—Columbia Iron Pipe & Nipple Co. has been incorporated with $20,000 capital by M. Efrus, I. Clar and M. E. Phillips, B. Gassman, 63 Park Row, is attorney.

NEW YORK—Bosmil Engine Corp. of New York has been incorporated with $100,000 capital by M. Miller, C. Van De Merlin and L. Van Der Poel. G. W. Tucker, 23 Beaver street, is attorney.

NEW YORK—Watkins Structural Steel Co. has been incorporated with $15,000 capital by F. Nosevitsky, A. Nosevitsky and S. Nash. Burstein & Cohen, 351 Stone avenue, are attorneys.

NEW YORK Pompeian Bronze Co. Inc., 223 Fifth avenue, has bought a site at Bushwick place and Meserole street, Brooklyn,

Industrial Business Changes

TRUMBULL STEEL CO., Youngstown, O., will remove its New York offices from the Grand Central Terminal building, where they have been for 12 years, to the new Graybar building, being built east of the Grand Central terminal, when it is completed next spring. The change will be to obtain more room and because of the central location and intimate contact with transportation offered by the new structure.

* * *

Clark Controller Co., Cleveland, has appointed K. I. Clisby, Woolworth building, New York, its representative.

* * *

W. H. Taylor Co., Allentown, Pa., has been appointed distributor for Quigley Furnace Specialties Co. Inc., New York. Stock will be carried.

* * *

Arter Grinding Machine Co., Worcester, Mass., has moved into a new building 90 x 100 feet, equipped with 5-ton crane. The central bay is for erecting and the side bays for manufacturing operations.

* * *

Commercial Truck Co., 300 Hunting Park avenue, Philadelphia, has bought the business of the Electruck Corp., 532 West Forty-sixth street. Manufacturing probably will be consolidated at the Philadelphia works.

* * *

Fritz Brass & Copper Co., Philadelphia, has been formed to take over the business of the Fretz-Lex Brass & Copper Co., 826 Arch street. Officers of the former company form the new organization.

* * *

Leslie Co. has been organized at Lyndhurst, N. J., with S. Inglis Leslie president, J. J. Cizek vice president and J. M. Naab secretary and treasurer, to take over the company of the same name, manufacturing railroad and marine equipment and machinery.

* * *

Sundstrand Machine Tool Co., Rockford, Ill., has appointed T. B. Buell, Syracuse, N. Y., sales engineer in eastern territory. L. A. Dumser, formerly with Kearney & Trecker Corp., has been made sales engineer in middle western territory with headquarters at Milwaukee.

* * *

Carborundum Co., Niagara Falls, has transferred Ferrand Hall from the post of district sales manager at Cleveland to the main plant. He is succeeded by Harry Collinson, who has represented the company at Milwaukee. Carl J. Steuber, formerly a special service representative, will be district sales manager at Milwaukee.

Iron and Manganese Ores and Minerals

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range bessemer, 51½ per cent iron	$4.55
Mesabi bessemer, 51½ per cent iron	4.40
Old Range nonbessemer, 51½ per cent iron	4.40
Mesabi nonbessemer, 51½ per cent iron	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent	9.00 to 10.50
Copper free low phosphorus 53 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, f.o.b. cars Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	10.00 to 11.00
North African low phosphorus	9.25 to 9.75
Swedish and Norwegian low phosphorus, 68 per cent	10.25 to 10.75
Swedish foundry or basic, 66 to 68 per cent	9.00 to 9.50
Spanish foundry or basic, 50 to 54 per cent	8.75 to 9.25
North African foundry and basic 50 to 54 per cent	8.50 to 9.50

Manganese Ore

Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent, 32 to 35 cents
Indian, minimum 47 per cent....32 to 35 cents
Caucasian, 53 to 55 per cent.....
Washed .....40 cents c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$17.50 to 18.00
Washed gravel, imported duty paid eastern tidewater, per tons	16.50 to 17.75

N. Y., with 2-story building, which will be used to enlarge its production.

NEW YORK—Disbecker Electric Appliance Corp. has been incorporated with $100,000 capital and 1000 shares common no par value by H. P. Disbecker, S. A. Gafvert and F. W. Douglas. W. E. Clark, 71 West Twenty-third street, is attorney.

NEW YORK—Brecker Domestic Appliance Corp. has been incorporated with $50,000 capital to manufacture machinery and appliances by A. Brecher, E. Kug and I. S. Worthman. L. Levy, 277 Broadway, is attorney.

NEW YORK—D. X. Electrical Products Corp. has been incorporated to manufacture radio appliances with 100 shares no par value by A. J. Gross, B. S. Krutkoff and B. Rosenfield, L. Blumenberg, 35 Nassau street, is attorney.

NIAGARA FALLS, N. Y.—Mathieson Alkali Works, 2400 Buffalo avenue, will build a 1-story ammonia plant 80 x 130 feet. General contract to Laur & Mack, 1400 College avenue.

ROCHESTER, N. Y.—Rainbow Appliance Corp. has been incorporated to manufacture household appliances with $400,000 capital and 4000 shares no par value by G. N. Perkins, G. C. Perkins and W. R. Moyes. Hubbell, Taylor, Goodwin & Moser, Rochester, are attorneys.

CINCINNATI—Kirk & Blum Mfg. Co., 2850 Spring Grove avenue, manufacturer of ventilating, conveying and dust-collecting machinery, has bought an adacent building and doubled capacity for production of sheet metal parts for its own use and for other manufacturers.

CLEVELAND—American Radiator Co. is building a warehouse at 1294 East Fifty-fifth street, near St. Clair avenue, 100 x 185 feet, general contract to H. K. Ferguson Co.

FAIRPORT, O.—Fairport & Painesville Eastern railroad, J. H. McNash president, Painesville, O., will build a 1-story machine shop 90 x 180 feet. R. E. Sheal, Union Trust building, Cleveland, architect.

TOLEDO, O.—Champion Spark Plug Co., R. A. Stranahan president, is considering expansion of its plant at outlay of $200,000.

TOLEDO, O.—City Machine & Tool Co. has leased large additional space and will install equipment to increase production. Company manufactures tools and dies.

TOLEDO, O.—Toledo Pipe Threading Machine Co., Frank Collins president, 1445 Summit street, has let general contract to A. Bentley & Sons Co., 201 Belmont avenue, for 2-story factory building 63 x 116 feet. (Noted Sept. 2.)

ALLENTOWN, PA.—Central Railroad of New Jersey is building a railroad engine terminal east of the city, covering 60 acres, including shops for building and repairing cars, and equipment, a 36-stall roundhouse, turntable 100 feet in diameter, warehouse, coaling docks, machine shop and a railroad Y. M. C. A. building.

ALTOONA, PA.—Pennsylvania railroad, A. C. Shand, Philadelphia, chief engineer, will build a 1-story tank shop here 20 x 632 feet.

ALTOONA, PA.—General contract for a tank shop service building for the Pennsylvania railroad has been awarded to the Building & Industrial Construction Co., Pittsburgh. Bids are now being asked for structural steel for this project.

CHESTER, PA.—J. K. Land Machine Co., general machine shop, will rebuild burned portion of its plant and replace damaged equipment.

FRANKLIN, PA.—Chicago Pneumatic Tool Co., 6 East Forty-fourth street, New York, is preparing to build additions to its plant on adjoining property recently bought.

GREENSBURG, PA.—Moore Metal Mfg. Co., South Greensburg, is building a 1-story plant 100 x 200 feet.

LEWISTOWN, PA.—Pennsylvania Central Light & Power Co., J. H. Shearer general manager, 1809 Union avenue, Altoona, Pa., is having plans drawn for a gas generating plant here.

MACUNGIE, PA.—East Penn Foundry Co. is building an addition to its foundry and is enlarging and improving other departments.

NEW CASTLE, PA.—Johnson Bronze Co. will build an addition to its machine shop to enlarge capacity for finishing its product.

PHILADELPHIA—Boiler Service & Repair Co., 1112 Liberty building, has been incorporated with $10,000 capital to manufacture and repair boilers.

PHILADELPHIA—Bids are being asked on structural steel for the Fern Rock subway car shops here. Bids will be opened by the transit department Sept. 16.

PHILADELPHIA—Contract has been awarded by the Wiedemann Machine Co., 1815 Sedgley street, for a $5000 plant addition to Paul Bross, 2515 West Huntingdon.

PHILADELPHIA—Plans for the proposed new plant addition of the Edward G. Budd Mfg. Co. have progressed to the point where bids are now being asked on the structural steel.

PHILADELPHIA—Philadelphia Electric Co. has let a $35,000 foundation contract to the John N. Gill Construction Co., 121 North Broad street, for a power house on Sanson street, West of Ninth street.

PHILADELPHIA—A $50,000 contract has been awarded by the Belmont Packing Co., Sepdiva and Butler streets, for a manufacturing building to the George Kessler Contracting Co., 1733 Butler street.

PHILADELPHIA—Leeds & Northrup Co., 4901 Stenton avenue, manufacturer of pyrometers and similar measuring devices, will build an addition to its plant. Morris & Erskine, 1716 Cherry street, are architects.

PHILADELPHIA—Philadelphia Gear Works, Russell T. Ball president and treasurer, Tioga and Richmond streets, will take bids about Sept. 15 on 2-story factory building. Horace W. Castor, Stephen Girard building, 21 South Twelfth street, is architect. (Noted Sept. 2.)

YORK, PA.—Read Machinery Co., manufacturer of machinery and parts, has let contract to the Austin Co. for a 1-story addition 80x192 feet.

CHATTANOOGA, TENN.—Casey-Hedges Co., Vulcan street, is having plans made for a plant 100 x 500 feet for the manufacture of steel barrels, for which it is seeking equipment.

HOUSTON, TEX.—Houston Terminal Ware-

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

Pennsylvania, No. 1	$40.00 to 43.00
Pennsylvania, No. 2	35.00 to 38.00
Ohio, No. 1	40.00 to 43.00
Ohio, No. 2	35.00 to 40.00
Illinois, No. 1	40.00 to 43.00
Illinois, No. 2	35.00 to 38.00
Kentucky, No. 1	40.00 to 43.00
Kentucky, No. 2	38.00 to 40.00
Missouri, No. 1	40.00 to 43.00
Missouri, No. 2	35.00 to 38.00
Maryland, No. 1	40.00 to 45.00
Maryland, No. 2	35.00 to 37.00
Georgia and Ala. No. 1	40.00 to 45.00
Georgia and Ala. No. 2	30.00 to 35.00

SILICA BRICK

Pennsylvania	40.00 to 43.00
Chicago	49.00 to 52.00
Birmingham	48.00 to 52.00

MAGNESITE BRICK

Per Net Ton Seaboard Base

9 x 4½ x 2½	65.00 to 70.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	45.00 to 50.00

house & Cold Storage Co. will build a 6-story warehouse. Engineering Service Corp., Houston, is engineer.

Business in Canada

CALGARY, ALTA.—The Western Steel Products Co. has completed addition to its plant here and is now installing equipment and machinery to enable it to double the present capacity of its plant.

BULL RIVER, B. C.—East Kootenay Power Co. is having plans prepared for power plant at Crow's Nest Lake, in Alberta, to cost $1,000,000.

FALSE CREEK, B. C.—The Western Boxes, Ltd., Vancouver, B. C., will build a factory here to cost $75,000, according to City Architect, A. J. Bird.

WINNIPEG, MAN.—Hilton Brothers, Ltd., 126 Lombard street, manufacturers of pipe and boiler coverings, etc., have let contract for addition to their plant here to cost $75,000.

GRAND FALLS, N. B.—The St. John Power Co. has awarded general contract to the Dominion Construction Co., Ltd., 917 Keefer building, Montreal, Que., for the construction of main dam, tunnel and power house here in connection with proposed power development to cost $1,500,000.

AMHERSTBURG, ONT.—The Mullen Coal Co. plans construction of a large coke oven plant here. Philip M. Mullen is interested.

BEAVERTON, ONT.—Petersen Roofing, Tile & Concrete Product Co., Ltd. has been incorporated with $125,000 capital and 25,000 common shares of no par value by Erik Skat-Petersen, Wilmot S. Veale, William H. Parkinson, Haswell F. Parkinson, and others.

ELORA, ONT.—John C. Mundell & Co. Ltd., is asking for a left hand 10 x 28 wheelock engine, second hand preferred.

KIRKLAND LAKE, ONT.—Excavation work has been started in connection with 300-ton mill here for the Sylvanite mines.

FORT WILLIAM, ONT.—The Fort William Paper Co. has taken out a permit and started work on $300,000 addition to mills here. Proposed construction includes digester building, acid building, chipper building, boiler house and addition to barker building. Buildings to be of brick, steel and concrete construction.

KITCHENER, ONT.—The city council contemplates building sewage disposal plant to cost $350,000, including pumps and equipment.

SOUTH PORCUPINE, ONT.—Porcupine-Paymaster Mining Co. will start work early in September on 1000-ton concentrating plant. Program includes a second 1000-ton plant, and it is the intention to eventually equip the property with a 5000-ton plant.

TORONTO, ONT.—All-American Radio, Ltd. has been incorporated to manufacture radio, with $40,000 capital, by M. L. Gordon, Everett Bristol and C. A. McKay.

TORONTO, ONT.—Oro Gold Mines, Ltd. has been incorporated to mine, smelt and refine ores, metals and minerals, with $2,500,000 capital by John S. McLaughlin, Gordon McLaughlin, Mary Collins, and others.

TORONTO, ONT.—Keora Mines, Ltd. has been incorporated to mine, smelt and refine ores, metals and minerals, with $2,500,000 capital by Frederick G. Gardiner, Harry S. Parkinson, and others.

TORONTO, ONT.—B 1 Mining Co. has been incorporated to mine, smelt and refine ores, metals and minerals with $2,000,000 capital by William F. Bennett, Alexander Denison, Chauncey E. Johnson, and others.

TORONTO, ONT.—Baldwin-Kirkland Gold Mines, Ltd. has been incorporated to mine, smelt and refine ores, metals and minerals, with $5,000,000 capital by Leonard Appleyard, Ethel L. Hawes, Alice McFadden, and others.

TORONTO, ONT.—Crown Reserve Consolidated Mines, Ltd. has been incorporated to mine, smelt and refine ores, metals and minerals, with $3,000,000 capital by William M. Marsh, Dorothy G. Meyer, Herbert McKnight, and others.

BEAUPORT, QUE.—Citadel Brick Co., Quebec, Que., will start work this fall on manufacturing plant here to cost approximately $1,000,000.

MONTREAL, QUE.—Nard Construction Co., Ltd. has been incorporated with $75,000 capital by James A. Mathewson, Arthur L. Smith, John Kerry, and others.

MONTREAL, QUE.—Contracts have been awarded in connection with $30,000 addition to the plant of the Johnson Wire Works, 50 Dagenais street. The structural steel contract has been let to the Dominion Bridge Co. Ltd., 285 Beaver Hall hill, Montreal.

New Trade Publications

AIR TOOLS—The Buckeye Portable Tool Co., Dayton, O., has issued a folder describing its air drills and air grinders. Capacities, weights and speeds of the tools are given.

REFRACTORIES—Ten attractive bulletins have been prepared for distribution by the Chicago Retort & Fire Brick Co., Chicago, covering various phases of use of its products.

STEEL FURNITURE—Berger Mfg. Co., New York, has issued a folder covering its steel office furniture, filing cases, safes, shelving and similar devices, well illustrated, with dimensions and descriptions.

POWER PRESSES—Zeh & Hahnemann Co., Newark, N. J., has issued a bulletin illustrating and describing its inclinable power presses, with data on construction and operation.

CHAINS AND SPROCKETS—A new catalog has been prepared and issued by the Webster Mfg. Co., Chicago, covering its various types of chains and sprockets for a wide variety of uses. It is fully illustrated and shows actual installations in operation.

MANDREL—A leaflet has been issued by the J. Faessler Mfg. Co., Moberly, Mo., describing a new method of applying side and main rod bushings and brasses by means of a mandrel and rollers that roll the bushing to compactness and accurate fit.

BAR BENDERS—A catalog has been issued by Kardong Bros. Inc., Minneapolis, Minn., covering its line of bending machines for handling steel bars for concrete work and other purposes and its wire straighteners and spacing punches.

CASTINGS—William H. Barr Inc., Buffalo, has issued a catalog containing useful data concerning brass and bronze castings. Chemical and physical characteristics of various nonferrous alloys manufactured by this firm are given.

NICKEL STEEL—The International Nickel Co., New York, recently has issued three bulletins on nickel steel. One of the bulletins deals with the inspection, another with alloy steel die blocks and the third with automobile design and automotive steels.

ELECTRICAL DEVICES—Vaporproof condulets of various shapes and sizes for a variety of purposes are shown in a folder issued by the Crouse-Hinds Co., Syracuse, N. Y. These condulets are for use in installations where vapors, fumes, gases or dust are present.

HARDNESS TESTER—A booklet by the Wilson-Maeulen Co. Inc., New York, contains a compendium of possibilities and current practices with one type of tester. The subjects covered include surfaces, skill, accuracy, range and adaptability, inspection, specifications and testing various classes of material.

DIVIDING TABLES—A circular by the Societe Genevoise d'Instruments de Physique, Geneva, Switzerland, is being distributed by the R. Y. Ferner Co., Washington, illustrating its universal dividing tables for jig boring machines. It gives full description and is well illustrated.

ELEVATORS—Portable elevators of various capacities manufactured by the New Jersey Foundry & Machine Co., New York, are shown in illustration in a folder issued by the firm. These elevators are either hand power or electrically driven and are made especially for materials handling.

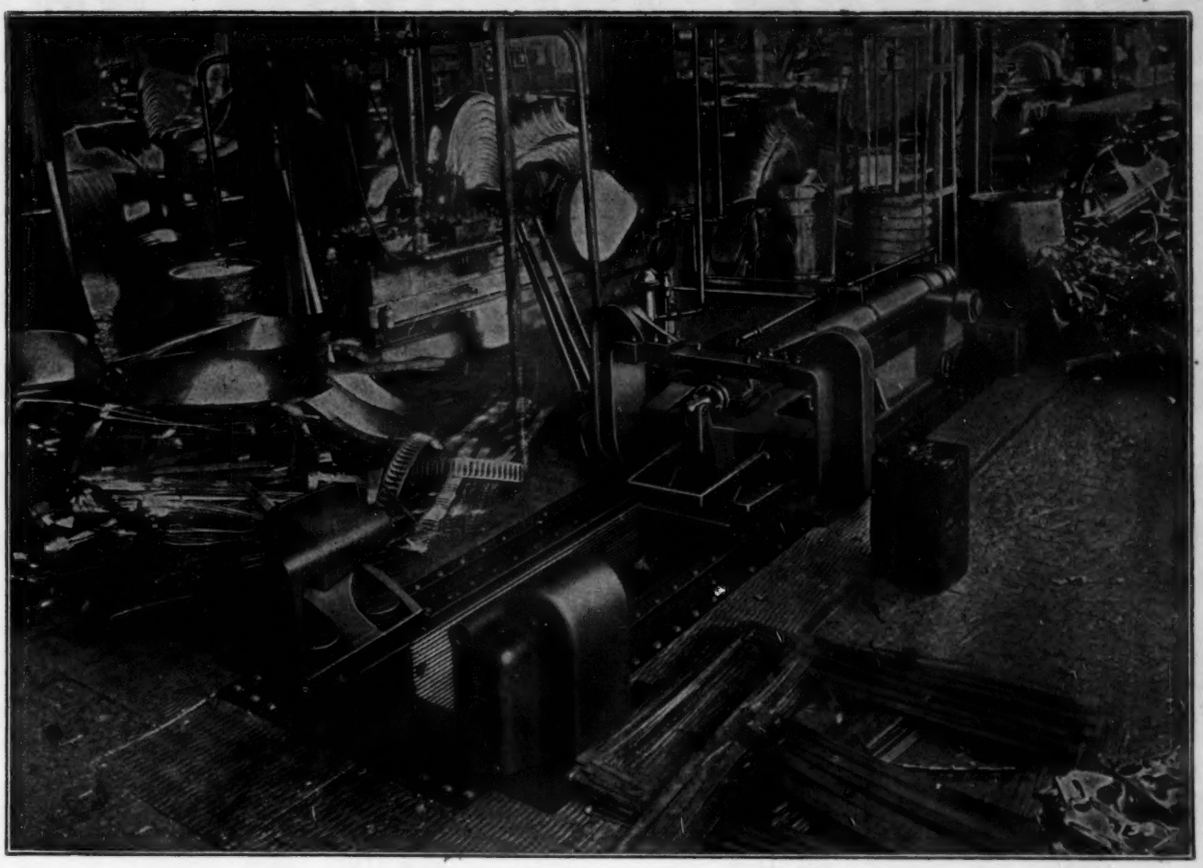
WOOOWORKING MACHINES — Portable woodworking machines for pattern shops, shipping rooms, woodworking plants, etc., are shown in illustrations in a catalog issued by the J. D. Wallace & Co., Chicago. Descriptions and features of construction of the machines are given.

AUTOMATIC THREADING MACHINES—Two bulletins have been issued by the Rickert-Shafer Co., Erie, Pa., illustrating its automatic single and double spindle threading and second operation machines. Both are illustrated, showing the machines and parts and the test gives full description.

BELTING—A report of tests of its belting by the Labaratoire d'Essais, Paris, has been reproduced in a booklet by E. F. Houghton & Co., Philadelphia. The report goes into the properties and operation of this class of belting and is illustrated by graphs showing performances under test and tables carrying similar information.

FLEXIBLE SHAFT EQUIPMENT—Various types of flexible shaft equipments, portable tools and labor saving devices manufactured by the R. G. Haskins Co., Chicago, are shown in its recent catalog. Descriptions, sizes and accessories are given. Applications of the machines in industry are shown in illustrations.

ELECTRIC LIGHTING—A series of attractively illustrated booklets on various types of lighting has been issued by the Edison Lamp Works of the General Electric Co., Harrison, N. J. They cover motorcar, garage and display room lighting, lighting of the metalworking industries, calculation of the lighting installation, theory and characteristics of mazda lamps and lighting of offices and drafting rooms.



Typical Installation in Well-Known Automobile Plant

WHY SHEET-SCRAP CAN BE PROFITABLY COMPRESSED

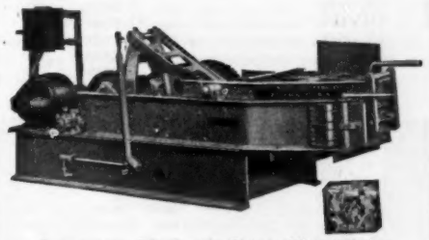
It commands at all times the best price;
It can be more conveniently stored;
It can be more economically handled;
It can be readily held for favorable markets;
It practically eliminates corrosion;
It permits of loading cars to capacity;
It saves much heat in remelting.

LOGEMANN SCRAP-METAL PRESSES

Hydraulic and Mechanical Types

LOGEMANN BROTHERS COMPANY
3126 Burleigh St. Milwaukee, Wis.

Also presses making crucible-size bricks of copper, brass, aluminum and other metals.



Logemann Mechanical-type Metal Baler

Please indicate character of scrap, quantity and heaviest gauge, when writing.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount or $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

	Black	Galvanized
Butt Weld		
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized.)

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS		
Butt Weld		
¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
8 to 6-inch	28	13
7 to 12-inch	26	11
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized.)

Boiler Tubes

Pittsburgh less carload discounts. Carload 4 points larger

STEEL (Lap Welded)	
2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
4¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

(Note—Additional discounts of 5 to 7 extra 5 per cents now being given.)

CHARCOAL IRON	
1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¾ to 4½-inch	5

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS COLD DRAWN	
1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off
SEAMLESS HOT ROLLED	
2 and 2½-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.20 per cent.....50 to 55 off

Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Net prices per foot f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including ⅞-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot..... .20c

Plates over 72 Inches Wide

Plates less than ¼-inch gage, to and including ⅞-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept. or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet....No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

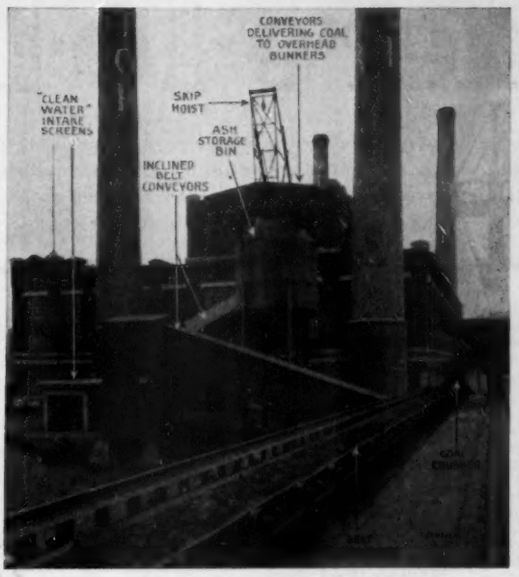
Additional extra ..... .10c

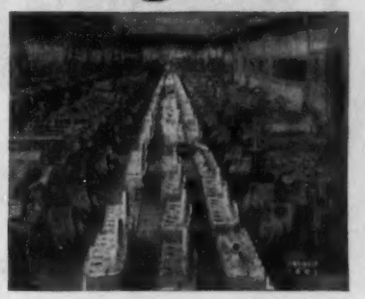
Irregular Sketches

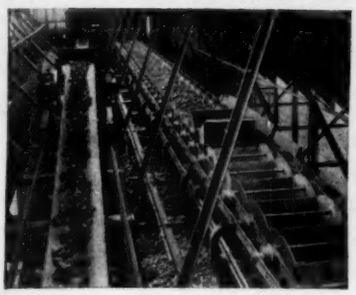
With not more than four straight cuts. (Sketches cannot be sheared wiht re-entrant angles)

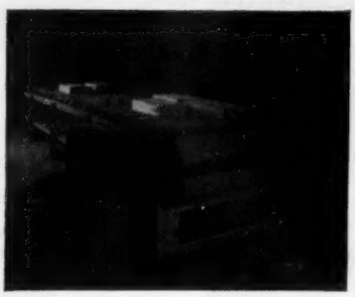
Additional extra ..... .20c

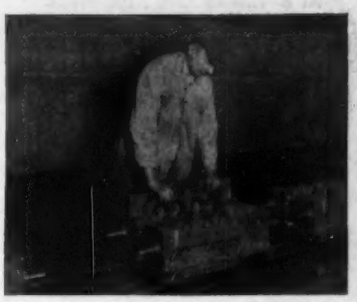
For Material Handling
See the Nearest Link-Belt Engineer











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Our policy of designing machinery to meet the particular conditions under which it is to operate, has resulted in world-wide successful installations.

Because the Link-Belt line of material handling equipment is so complete—our recommendations are made without prejudice as to the type of equipment to be used. All Link-Belt machinery is built in our own manufacturing plants, under the supervision of the designing engineers.

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